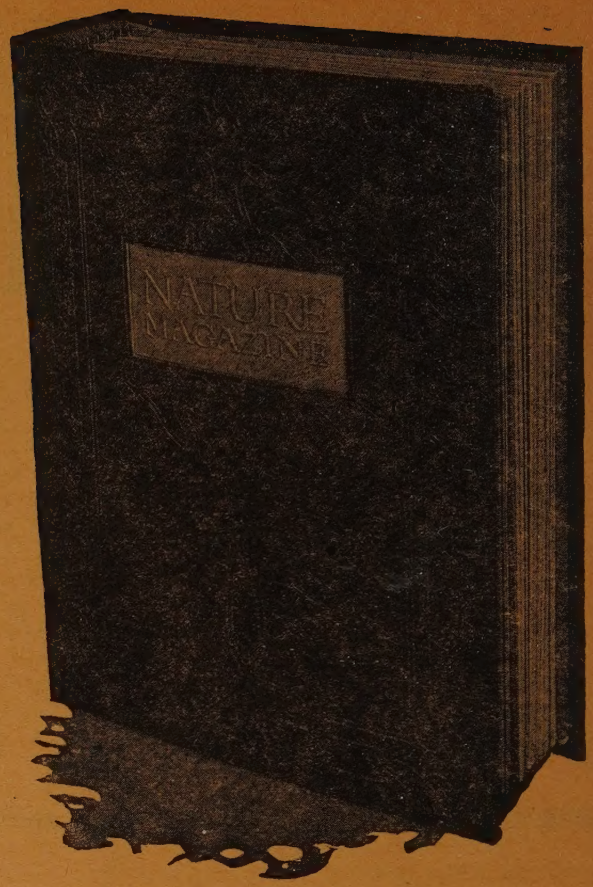
NATURE MAGAZINE

ugust-September, 1945 35 Cents Vol. 38, No. 7

Keep a Year's Issues of NATURE MAGAZINE in this Handsome Binder



"Where's the latest copy of Nature Magazine?" How often you have heard that question! And how often an answer like this: "Look on the chair . . . over in the corner!" Like as not, the much desired copy will turn up under the cushion in the window seat. And great will be the lament at torn pages and creased pictures.

Unlike most magazines, Nature Magazine is the sort you want to keep. Naturally issues accumulate. There's an easy solution to the problem of mislaid copies, unsightly disorganized piles of magazines. Get one of these binders specially prepared for Nature Magazine.

Just slip in the copies of Nature Magazine as they arrive. Snap them in with the little unbreakable hooked wire. This binding device while light is strong and sturdy, guaranteed to withstand all ordinary usage. The copies may be removed as easily as they are inserted. At the end of the year, remove the year's copies and have them bound. Your binder is then ready to serve another year, accommodating each issue as it arrives.

Always Protected and Right at Hand

This binder looks and handles like a book. It is a bound book in every respect except that you snap the magazines in the cover one at a time. It opens flat as a bound book, which makes it easy to handle and to read. It keeps the magazines handy for a year—or as long as you wish to retain them in the binder. Meanwhile the contents are protected from handling, tearing and from being mislaid or carried away. The binder is finely grained, dark green, gold embossed . . . a handsome addition to desk or library.

← Opens Flat like a book

This De Luxe Binder only $2.25

- The cost of making this binder has increased; the supply is limited; and it may not be possible to get a new supply for duration of the war.

Send for your binder today before this copy of your magazine gets mislaid. Satisfaction guaranteed or your money refunded. Use the coupon here or, if you prefer, write us your order so as to avoid cutting the magazine.

AMERICAN NATURE ASSOCIATION
1214 Sixteenth St., N. W.
Washington 6, D. C.

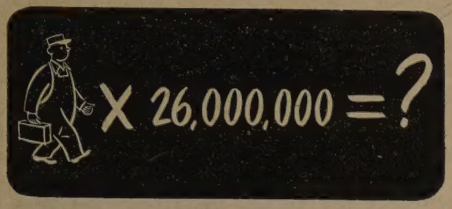
Send me ..... of your De Luxe Binders for NATURE MAGAZINE, for which I enclose (check, P. O. Money Order) for $.....

Name .....

Street and No. .....

City and State .....

A Problem in Multiplication



Take the case of John Smith, average American:

For over three years now, he's been buying War Bonds through the Payroll Savings Plan. He's been putting away a good chunk of his earnings regularly—week in, week out.

He's accumulating money—maybe for the first time in his life. He's building up a reserve. He's taking advantage of higher wages to put himself in a solid financial position.

Now suppose *everybody* in the Payroll Plan—everybody who's earning more than he or she needs to live on—does what John Smith is doing. In other words, suppose you multiply John Smith by 26 million.

What do you get?

Why—you get a whole country that's just like John Smith! A solid, strong, healthy, prosperous America where everybody can work and earn and live in peace and comfort when this war is done.

For a country *can't help* being, as a whole, just what its people are individually!

If enough John Smiths are sound—their country's *got* to be!

The kind of future that America will have—that you and your family will have—is in your hands.

Right now, you have a grip on a *wonderful* future. Don't let loose of it for a second.

Hang onto your War Bonds!

BUY ALL THE BONDS YOU CAN

KEEP ALL THE BONDS YOU BUY

American Nature Association

This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council

Pacific Mammals

Mammals of the Pacific World. By T. D. Carter, J. E. Hill and G. H. H. Tate. New York. 1945. The Macmillan Company. 227 pages. Illustrated. $3.00.

War has little in its favor, certainly, but it has forcibly broadened the horizons of millions of Americans. Typically, when fate has carried them to far places, many of these Americans want to know something about these places and the things of Nature that they find there. Our mail from overseas, and from relatives at home of soldiers and sailors overseas, testifies to that, for we have had many requests for references to books on flora and fauna, particularly of the Pacific region. Our inquirers have thought in terms of the excellent guides to birds, mammals, flowers, trees, fishes, insects, reptiles and such that we are fortunate to have for North America. Virtually nothing comparable existed for the Pacific area. The information was assembled, but was, for the most part, scientific in character, often in a foreign language and unavailable or useless to the layman.

Recently an excellent bird book for the Pacific was reviewed in these pages, and now comes *Mammals of the Pacific World.* It is the result of collaboration by three members of the staff of the American Museum of Natural History, and is the first of "The Pacific World Series", prepared under the auspices of The American Committee for International Wild Life Protection. To come are books on the insects, native peoples, reptiles, plant life, and fishes and shells, all of the Pacific. Also coming is a book, *The Pacific World,* edited by Fairfield Osborn, chairman of the publication committee of the International Committee. These will be something on the positive side of the ledger of war, and we trust that the scheduled books will follow hot on the heels of the excellent start made with this volume on mammals. R. W. W.

Vitamins

What to Do about Vitamins. By Roger J. Williams. Norman, Oklahoma. 1945. University of Oklahoma Press. 56 pages. $1.00.

The author of this little book is the director of the Biochemical Institute of the University of Texas and the discoverer of pantothenic acid. During his many years of research he has been asked many questions about vitamins, has found much confusion existing among laymen, and feels that "the man in the street" should be better informed in order that he may properly weigh the incessant advertising of vitamins over the air and in publications. This is the object of this book, a clear and concise picture of the place of vitamins in our dietary habits. He has achieved his objective better than any publication we have ever seen. The text is supplemented by numerous simple charts, maps of the highways to health.

Young Mother Delighted With Writing Success

"After taking the N.I.A. Course, the first article submitted to a top flight woman's magazine, resulted in its prompt acceptance. Despite my domestic duties, including the rearing of a small daughter, I have found time to write a dozen stories, all of which have been accepted. All potential writers should sign up with N.I.A." — Marcia Audrey Garden, 2302 West Main St., Richmond 20, Va.

What makes WRITING ability GROW?

For a number of years, the Newspaper Institute of America has been giving free Writing Aptitude Tests to men and women with literary ambitions.

Sometimes it seems half the people in America who are fired with the desire to write have taken advantage of this offer to measure their ability.

WHAT THE TESTS SHOW

Up to date, no one who could be called a "born writer" has filled out our Writing Aptitude Test. We have not yet discovered a single individual miraculously endowed by nature with all the qualities that go to make up a successful author.

One aspirant has interesting ideas—and a dull, uninteresting style. Another has great creative imagination, but is woefully weak on structure and technique. A third has a natural writing knack—yet lacks judgment and knowledge of human behavior. In each case, success can come only after the missing links have been forged in.

Here, then, is the principal reason why so many promising writers fail to go ahead. Their talent is one-sided—incomplete. It needs rounding out.

LEARN TO WRITE BY WRITING

NEWSPAPER Institute training is based on journalism—continuous writing—the sort of training that turns out more successful writers than any other experience. Many of the authors of today's best sellers are newspaper-trained men and women.

One advantage of our New York Copy Desk Method is that it starts you writing and keeps you writing in your own home, on your own time. Week by week, you receive actual assignments just as if you were right at work on a great metropolitan daily.

All your writing is individually corrected and criticized by veteran writers with years of experience "breaking in" new authors. They will point out those faults of style, structure or viewpoint that keep you from progressing. At the same time, they will give you constructive suggestions for building up and developing your natural aptitudes.

In fact, so stimulating is this association that student members often begin to sell their work before they finish the course.

We do not mean to insinuate that they sky-rocket into the "big money," or become prominent overnight. Most beginnings are made with earnings of $25, $50, $100, or more, for material that takes little time to write—stories, articles on nature studies, gardening, business, fads, homemaking, local and club activities, etc.—things that can easily be turned out in leisure hours and often on the impulse of the moment.

FOR THOSE WHO WANT TO KNOW—FREE WRITING APTITUDE TEST

If you really want to know the truth about your writing ambitions, send for our interesting Writing Aptitude Test. This searching test of your native abilities is free—entirely without obligation. Fill in and send the coupon. Newspaper Institute of America, One Park Ave., New York 16, N. Y. (Founded 1925)

NOTICE TO CANADIANS

Newspaper Institute's operations in Canada have been approved by the Foreign Exchange Control Board, and to facilitate all financial transactions, a special permit has been assigned to their account with The Canadan Bank of Commerce, Montreal.

Free

Newspaper Institute of America,
One Park Ave., New York 16, N. Y.

Send me, without cost or obligation, your *Writing Aptitude Test* and further information about writing for profit as promised in NATURE MAGAZINE, August.

Mr. }
Mrs. } .....
Miss }

Address .....

(All correspondence confidential. No salesman will call on you) 87-M-435

COPYRIGHT 1945, NEWSPAPER INSTITUTE OF AMERICA

Nature in Print

By HOWARD ZAHNISER

WRITING about August, John Joseph Mathews in his new book *Talking to the Moon* says:

"If the Osage had known about gold and had not been so close to the creative earth, they might have called this the Golden Moon for aesthetic reasons. The flowering weeds are predominantly yellow during this season, the blues, reds, and purples having passed or faded into pastels, so that the prairies are softer and mellowed. Yellow is very definitely the color of August; even the bluestem seems old-gold-washed at a distance, especially when blooming. There are the pastel blues and lavenders of the thistles and other flowers, but the sunflowers and the prairie goldenrods are glowing yellow. Yellow butterflies predominate, and the goldfinch comes to the ridges to tear at the thistle and to find something in the heart of the sunflower."

It seems apparent that Mr. Mathews describes August because it is one aspect of the universe of which he is a part. He writes of flowers because they help make the world what it is. He writes also, and surely for the same reason, about birds, wild mammals, storms, and human beings—human beings of both his races, in his Oklahoma home with the Osage and in his national capital at Washington. Mr. Mathews's great-grandfather married an Osage Indian. He himself has been a member of the Osage Tribal Council. His Caucasian affiliations have brought him not only a University of Oklahoma training in geology but also a degree in natural sciences at Oxford. His study is apparently man as a part of Nature—not Nature as anything apart from himself but Nature as the whole of which man is a part. "Man," he says, "is under the same natural urges as the other species of the earth." Any human enterprise Mr. Mathews would seem to ponder as an expression of a primal urge. "I realized," he declares, "that man's artistic creations and his dreams, often resulting in beauty, as well as his fumbling toward God, must be primal, possibly the results of the biological urge which inspires the wood thrush to sing and the coyote to talk to the moon."

And so *Talking to the Moon* is the title that Mr. Mathews has chosen for this book in which he describes a quest he has made for an understanding of his universe. It is a book of personal experiences, with the interest of anecdote. It is also a book of observations with the interest there is in vivid recreations through words. And its form is that suggested by the cycle of the earth in its revolution about the center of our universe. It is an Indian calendar of the moons of the year. *Talking to the Moon* is a book that all of us will wish to read.

Many of us seldom get, or take, the opportunity to sense the magnitude of the whole scheme of Life of which we are only a part. We know only the rush of human events, and we seldom even challenge the presumption of those who call this rush the march of time. Only a few of those who are in the midst of this rush, and it includes us all, can ever be expected to break pace long enough to fall in step with the greater procession that moves through the natural seasons. Most of us know what it is to be, as Matthew Arnold wrote,

> . . . jaded with the rush and glare
> Of the interminable hours.

We live by hours, and hours are man-made units. They are arbitrary, not natural. We time ourselves by clocks more strictly than by calendars.

Thus, when Mr. Mathews's *Talking to the Moon* comes to us as from a man "who had pulled himself out of the roaring river of civilization to rest for a while," many of us are eager to listen for the sake of the rest that we ourselves can thus snatch. This man with Indian genes in his blood who built a small sandstone house for himself where he once lived as a boy seems to offer us in a book an avenue of escape. As he leaves the citied scenes where small successes make up great failure, we go with him in our imagination as on an excursion. And we may err in this. Instead of finding ourselves on an excursion with an escapist we may soon surmise that we are migrating, or wandering in a quest. Has any thoughtful reader ever made a round trip from his starting point to Thoreau's hut at Walden? A return to the starting point from the sandstone house that Mathews built on a ridge in the Osage country may be as difficult. When one who is overhearing Mathews's *Talking to the Moon* begins to ponder the statement "man has to follow the laws of the earth in all categories of his complex existence," there is no escape from perplexities. (That includes even the San Francisco conference.) There is rather a new fronting of perplexities, and they may look different.

Mr. Mathews's discourse is in five sessions and fourteen parts. There are two introductory descriptions of The Sandstone House and The Blackjacks, which establish the scene. As SPRING, SUMMER, AUTUMN, or WINTER, then, the twelve moons of the year are described. Just-Doing-That Moon, Planting Moon, and Little-Flower-Killer Moon. Then Buffalo-Pawing-Earth Moon, Buffalo-Breeding Moon, and Yellow-Flower Moon (that is August). In autumn are the Deer-Hiding Moon, Deer-Breeding Moon, and Coon-Breeding Moon. And then, after Baby-Bear Moon and Single Moon by Himself, the winter ends with Light-of-Day-Returns Moon.

There also this book ends, but in anticipation again of Just-Doing-That Moon. And as a reader knows that Mr. Mathews himself will be wishing to repeat the cycle again and again, so it is easy for the reader to turn once more to the beginning of the book and listen again, hearing new notes. It may be to gather together in the mind the many characterizations that Mr. Mathews has made of coyotes—or of some other of the wild creatures with whom he fraternizes. It may be to enjoy the anecdotes (in which, incidentally, Mr. Mathews would not have hesitated to write "spade" if spade had been the word used, which it never was). It may be to reconstruct the routine of Mr. Mathews's living, for this too can be the object of a curiosity not entirely idle. The fact is there are many reasons for tarrying with this *Talking to the Moon.*

Best of all for its immediate circulation *Talking to the Moon* is an interesting book because its author is a unique man living a singular life in a varied environment. He writes about himself, his life, and his surroundings, and he writes simply, directly, and vividly for the most part.

On reflection one wonders further whether Mr. Mathews has not written a book that implicitly is also an interpretation of what the American Indian has contributed to our American civilization. How much of what Mr. Mathews has to contribute to our understanding of ourselves is a result of his Indian inheritance.

Talking to the Moon. By John Joseph Mathews. Chicago: University of Chicago Press. 1945. 244 pp., with 14 chapter headpieces by Paul B. Sears, 14 drawings by the author. $3.

Silver Weather

By IRENE STANLEY

The silver pencils of the rain
Are writing lyrics on the street.
What outstretched hand that would restrain
The silver pencils of the rain,
Or fail to add its own refrain
To sparkling drops and flying feet?
The silver pencils of the rain
Are writing lyrics on the street!

Pacific Peoples

Native Peoples of the Pacific World. By Felix M. Keesing. New York. 1945. The Macmillan Company. 144 pages. Illustrated. $3.00.

The author of this timely book in "The Pacific World Series," being published under the auspices of the American Committee for International Wild Life Protection, is professor of anthropology at Stanford University. He has made an intensive study of the diverse peoples scattered among the thousands of Pacific islands. War has brought these islanders into personal association with a great many American service men and women, and, second-hand, to the knowledge of the folks at home. Both groups will find a great deal of interest in this informative and readable little book.

Old World Mammals

Extinct and Vanishing Mammals of the Old World. By Francis Harper. New York. 1945. American Committee for International Wild Life Protection, Zoological Park, New York 60, N. Y. 850 pages. Illustrated by Earl L. Poole.

This is a distinguished and valuable contribution to the literature of mammalogy and conservation. Dr. Harper has assembled information on the mammals that have become extinct during the Christian era, and those that are now threatened with extirpation. In an introductory chapter he discusses the factors that have brought about the progressive depletion of the mammalian faunas of the Old World and provides a chronology of extinction.

"During the past 2000 years," he summarizes, "the world has lost about 106 forms of mammals. . . . Approximately 67 percent of these losses have occurred during the past century, and 38 percent during the past half-century. Thus the rate of extinction is being steadily accelerated."

The study discovered that, in addition to the forms already wiped out, about 600 others may be considered as vanishing or threatened. The primary factor is, of course, civilized man "operating either directly through excessive hunting or poisoning, or indirectly through invading or destroying natural habitats, placing firearms in the hands of primitive peoples, or subjecting the primitive faunas of Australia and of various islands to the introduction of aggressive foreign mammals, including fox, mongoose, cat, rat, mouse and rabbit."

"The chief hope for the survival of the larger mammals of the world lies in the establishment and maintenance of a sufficient number of sanctuaries," Dr. Harper says. This, he adds, should serve almost everywhere save in Australia, where the introduced animals constitute a menace largely beyond human control.

The balance of this fine report deals with the individual species or subspecies, presenting the facts with respect to their extinction or their present threatened situation. Reasons for extinction or depletion, where possible, are assigned.

Funds for this truly monumental study came from about forty different sources, including the American Philosophical Society, the Academy of Natural Sciences of Philadelphia, the Boone and Crockett Club, the Conservation Committee of the New York Zoological Society and the American Wildlife Institute, as well as individuals. The volume was seen through the press and provided with an excellent index by Paul H. Oehser, editor of the United States National Museum.

R. W. W.

Michigan Plants

The Flora of Oakland County, Michigan. By Marjorie T. Bingham. Bloomfield Hills, Michigan. 1945. Cranbrook Institute of Science. 155 pages. Illustrated. $1.00.

Subtitled "A Study in Physiographic Plant Ecology", the study covers an area of nine hundred square miles. It discusses the vegetational cover of the area as created by environmental factors. This is an interesting and valuable booklet, not only locally but as a guide to a better understanding of the plants of any area.

Also Received

Dream Awake and Remember. By Elinor Henry Brown. Hollywood, California. 1945. The Camas Press, 3245 Rowena Avenue. 28 pages. $1.00 paper bound; $1.50 cloth bound.

An attractive collection of poems, many of them previously published in periodicals, and here gathered with commendable economy of space and paper.

American Civic and Planning Annual. Edited by Harlean James. Washington, D. C. 1945. American Planning and Civic Association. 178 pages. $3.00.

This is the annual record of civic advance in the fields of planning, parks, housing, neighborhood improvement and conservation of natural resources.

The Ecology of the Prairie Chicken in Missouri. By Charles W. Schwartz. Columbia, Missouri. 1945. The University of Missouri. 104 pages, plus photographs and maps. $1.50.

A report on several years of study of the prairie chicken, its life habits, and the problems that affect its survival.

Dynamic Meteorology. By Jörgen Holmboe, George E. Forsythe and William Gustin. New York. 1945. John Wiley and Sons. 378 pages. $4.50.

A basic textbook on theoretical meteorology for students preparing for a professional career in this field. Also valuable to students of geophysics, aerodynamics, hydrology and various branches of pure physics.

IT'S EASY TO LEARN TO WRITE

The Magazine Institute, a private school owned, operated, and staffed by successful writers and editors, offers an up-to-the-minute course in writing for magazines, which makes it easy for beginners to get started in this rich field. You work in spare time at home. You may concentrate on either fiction or non-fiction. Send today for the FREE CATALOG describing the Magazine Institute method. No obligation.

THE MAGAZINE INSTITUTE, INC., Dept. 488-C
50 Rockefeller Plaza, Rockefeller Center, New York 20, N. Y.

SONGWRITERS

SONGS PUBLISHED MONTHLY. ADVANCE ROYALTY. Send your songs or poems today for our exciting offer. FREE book on songwriting. Don't miss this opportunity.

HOLLYWOOD TUNESMITHS
DEPT. 27-F 7024 MELROSE AVE. . HOLLYWOOD, CALIFORNIA

HOW TO WRITE for PROFIT

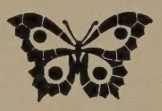
Many a former clerk, soldier, housewife, mechanic, teacher is now writing for profit. Why not you? You can learn and start making money right in your home...under the unique, practical methods of Palmer training . . . for writing fiction, newspaper features, magazine articles, radio scripts. To find out if you have writing ability, send for our "Talent Finder" Return it for our frank, confidential analysis and advice. No cost or obligation. It may start you on an ideal career.

PALMER INSTITUTE OF AUTHORSHIP
6362 Hollywood Blvd., Hollywood 28, Calif. Dept. TR.8

LEARN AT HOME TO MOUNT BIRDS

Animals, Heads, Fishes, Pets; to TAN. Be a Taxidermist. Profit and FUN.
Hunters, save your valuable TROPHIES. Mount ducks, squirrels, everything. Learn to TAN for leather and furs. Wonderful HOBBY Have a HOME MUSEUM. BIG PROFITS mounting for others. INVESTIGATE NOW.
FREE BOOK With 100 fine game pictures. NOW absolutely FREE. Write TODAY.
Send Postal TODAY for FREE BOOK. State AGE.
N. W. SCHOOL OF TAXIDERMY, Dept. 2948 Omaha, Neb.

BUTTERFLIES FOR A HOBBY



Learn to collect and raise Butterflies and Moths in your garden and mount them in Trays, Pictures, Book Ends and Novelties for pleasure or profit.

Send 50c coin for new illustrated Book of Instructions and start an interesting, unusual hobby.

THE BUTTERFLY ART SHOP
Box 447, Upland, California

VERSE FOR THE NATURE LOVER

Engravings and Verse
from the hands of one person

NATURE AND ART
by
GEORGE J. COX

Only a craftsman could sculpture sonnets and lyrics from words and engravings from wood, and combining the two still preserve their identity and fresh artistic beauty. The poet-artist is Chairman of the Art Department at the University of California. He is sensitive to the nuances of nature in all of its moods.....$ 2.50
Limited de luxe edition.....$10.00

Order Today From

BRUCE HUMPHRIES, Inc. . Publishers
27 Winchester Street, Boston, Mass.

NATURE MAGAZINE

PUBLISHED BY THE AMERICAN NATURE ASSOCIATION

To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and Devoted to the Practical Conservation of the Great National Resources of America

IN THIS ISSUE

August-September, 1945 Vol. 38, No. 7

Red-winged Blackbird .....Hexom Cover

Nature in Print.....Howard Zahniser 338

Silver Weather (Poem).....Irene Stanley 338

Contents Noted .....R. W. W. 343

Nothing to Report ....Edmund J. Sawyer 345

Tamarack Adventure ..William G. Schulz 349

The Moaning Birds..Lewis Wayne Walker 351

The Aye-Aye, or "Finger Animal" Fred Knauer 353

A Question (Poem)....Russell Pettis Askue 354

The Old Wood Pile.....Mary Carroll 355

Forest Fire Weather.....Edna H. Evans 358

No Holds Barred.....Richard L. Cassell 361

The Dormouse 365

Orchard Orioles .....George A. Smith 366

Scuttling the Antiquities Act (Editorial)..... 369

Your National Monuments Newton B. Drury 370

The Museum Goes to the Little Red Schoolhouse .....John Ripley Forbes 374

Wood—War Worker 377

The Mt. Lyell Salamander—An Unsolved Mystery .....Grace V. Sharritt 380

August-September Skies..Isabel M. Lewis 381

The School Page.....E. Laurence Palmer 382

Under the Microscope.Julian D. Corrington 390

NATURE MAGAZINE, PAST AND PRESENT, IS INDEXED IN THE READER'S GUIDE IN YOUR PUBLIC LIBRARY

U. S. AND CANADA
ONE YEAR.....$3
FOREIGN....$.75 EXTRA
TWO YEARS.....$5
LIFE $100

A. B. McClanahan, Advertising Manager

ADVERTISING OFFICES

New York 17—295 Madison Avenue
Washington 6—1214 16th St., N.W.
Chicago—203 N. Wabash Avenue
Los Angeles 15—Western Pacific Bldg.
San Francisco 4—Mills Building
Minneapolis 2—233 Radisson Hotel

NATURE MAGAZINE is published monthly, October to May, inclusive, bimonthly, June to September, inclusive, by the American Nature Association. Entered as second-class matter May 31, 1927, at the post office at Washington, D. C., U. S. A., and accepted for mailing purposes at the special flat rate of postage provided for in the United States Postal Act of October 3rd, 1917, and February 28th, 1925.

Publication and Editorial Office, 1214 16th Street, N.W., Washington 6, D. C.

Copyright, 1945 by American Nature Association. Title Registered U. S. Patent Office. Printed in the United States.

THE ASSOCIATION

ARTHUR NEWTON PACK.....President
Abiquiu, N. M.

RANDOLPH G. PACK.....Vice-President
Darien, Conn.

RICHARD W. WESTWOOD.....Secretary
Washington, D. C.

JAMES A. O'HEARN.....Treasurer
South Orange, N. J.

HARRY E. RADCLIFFE.....Business Manager
Washington, D. C.

DR. E. LAURENCE PALMER.....Director, Nature Education
Cornell University, New York

THE MAGAZINE

RICHARD W. WESTWOOD.....Editor

EDWARD A. PREBLE.....Associate Editor

JULIAN D. CORRINGTON.....Microscopy Editor

ISABEL M. LEWIS.....Astronomy Editor

E. LAURENCE PALMER.....School Editor

ANDREW S. WING.....Garden Editor

HOWARD ZAHNISER.....Book Editor

R. BRUCE HORSFALL.....Artist

HARRY E. RADCLIFFE.....Business Manager

SCIENTIFIC CONSULTING BOARD

DR. LELAND O. HOWARD
Retired Chief, U. S. Bureau of Entomology

DR. WALDO L. SCHMITT
Curator of Marine Invertebrates, U. S. National Museum

DR. HARRY C. OBERHOLSER
Cleveland Museum of Natural History

W. L. McATEE
Technical Adviser, U. S. Fish and Wildlife Service

C. W. GILMORE
Curator of Vertebrate Paleontology, U. S. National Museum

DR. PAUL BARTSCH
Curator of Mollusks, U. S. National Museum

DR. EDGAR T. WHERRY
Wild Flower Preservation Society

DR. WILLIAM M. MANN
Director, National Zoological Park

A Matter of Life and Death

In 1945, nearly 100,000 Americans will lose their lives—*victims of home-front accidents.* Three times that many will suffer permanent injury. And the cause for many of these accidents will be faulty vision, or vision unsuited to its tasks.

You might never think of an eyesight examination as a matter of life and death. But the things you do at work, at home, on the farm, or in traffic—the hazards of everyday living—require efficient, alert eyesight. Keen vision is safe vision, and reduction of accidents is a matter of national urgency.

How do you know that your vision is up to the demands of 1945 living? Modern science has proved that those who have visual defects frequently are not aware of them, and that vision capable of one task is sometimes inadequate for other work.

The only way you can be sure about your vision is to consult an ophthalmologist or optometrist for a complete visual analysis. If correction is called for, you can depend on the professional and technical skills of the optometrist or optician to provide modern attractive eyewear that will reduce your personal accident hazard, that will increase your comfort and your earning power.

Think first—stop accidents! Play safe—*be sure your vision is right!* Bausch & Lomb Optical Company, Rochester 2, New York.

BAUSCH & LOMB

ESTABLISHED 1853

Makers of Optical Glass and a Complete Line of Optical Instruments for Military Use, Education, Research, Industry, and Eyesight Correction and Conservation

AMERICAN MORTAR CREW IN ACTION ON PACIFIC BATTLEFRONT. SOLDIER AT LEFT IS GETTING TELEPHONE REPORTS FROM AN OBSERVER.

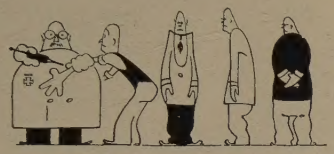
Millions of Military Telephones

In the last five years the Bell System has furnished millions of telephones for war, including 1,325,000 head sets for air and ground forces and more than 1,500,000 microphones. . . . Also more than 1,000,000 airplane radio transmitters and receivers . . . 4,000,000 miles of telephone wire in cables . . . a vast quantity of switchboards, gun directors and secret combat equipment. That helps to explain why we are short of all kinds of telephone facilities here at home.

BELL TELEPHONE SYSTEM

Contents Noted

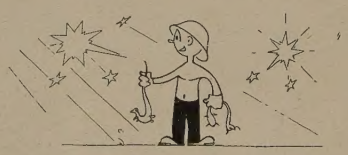
AMONG the machinations uncovered when the curtain was lifted by the collapse of Germany were experiments with a South American plant that would provide a substance to sterilize inferior peoples, including, we presume, us. The plant was *Dieffenbachia seguine,* named for a German surgeon-botanist named Johann Friedrich Dieffenbach, who lived during the first half of the nineteenth century. Members of this genus are popular as hothouse plants, and are grown for their striking and handsome foliage. *D. seguine,* however, packs a special punch, for it is known in the West Indies as the "dumb plant". This is because chewing its foliage frequently rendered the chewer speechless for several days. Dieffenbach, incidentally, became noted chiefly for surgery that transplanted noses and lips, and wrote a book about this art in 1828.



ON page 256 of our May issue we printed some pictures of ginseng, and asked the question: "What good is ginseng?", answering our own question by declaring it no good, since it had none of the therapeutic values long claimed for it. Now comes the manufacturer of a new cigaret—undoubtedly being rapidly bought up—with a boast that ginseng extract is a fine hygroscopic agent. Such an agent, it seems, is essential to hold tobacco together, a duty usually performed by glycerine, apple honey and some other things. On his package the manufacturer suggests, subjunctively, that ginseng "may help to relieve dry throat, cigaret cough and other irritations due to smoking", and "may be found much more pleasant and safe for those with ordinary colds and other respiratory difficulties. . . ." He calls this the "Panax Process", *Panax* being the generic name botanists use for ginseng, *Panax quinquefolium.* The ancients claimed this did for man just the opposite of *Dieffenbachia seguine,* which may be building up to something really startling in cigaret advertising.

THE following exchange took place between two good friends, one a naturalist and the other an enthusiastic sportsman. Said the sportsman: "I have read that wolves will often kill more animals than they can use for food. What would you call a creature that would do such a cruel thing?" The naturalist replied, "A sportsman." Our friend, who was the third party during this bit of dialog, adds that the two are still good friends. After all, the soundest friendship is based upon frankness with no reservations.

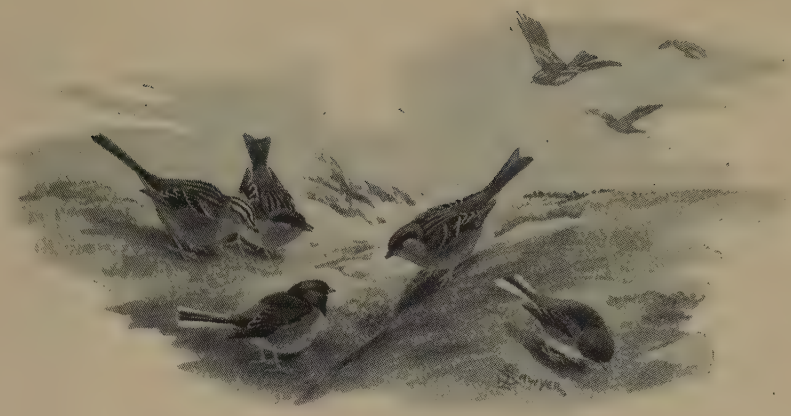
WHEN "the man with the whiskers" reached out and tapped William J. Beecher on the shoulder he was a temporary assistant at the Chicago Natural History Museum. Followed the usual preparation for war, and then Corporal Beecher found himself in the Solomons. There he fought Japs and collected specimens, even under fire. Going ashore at Rendova with the first assault wave, and as a medico, Bill still managed to collect museum specimens. In fact, he achieved a reputation for nonchalance by collecting lizards during repeated air raids directed at the concentrated beachhead. "Fellows would look at me and laugh, and maybe it relieved some of the tension," he says. "But I was really too scared to do anything beyond the line of duty. A number of times I was sure I was going to be killed, but I continued collecting just in case I wasn't. Incidentally, I wasn't. Finally, I persuaded other G.I.s to help in the collecting, and thus obtained more specimens for the museum." Soon after the Munda airstrip was secure, Bill began painting the animals and plants of the Solomons, especially the birds, doing sixty species in twenty-four weeks, using spare time that added up to about a day a week. Home on a forty-five-day furlough, Beecher devoted most of his time to working at the Museum on the collections of several hundred birds, mammals, lizards, snakes, frogs and other creatures he sent home from the Solomons. Among the reptilian specimens he failed to send back were Japanese, perhaps figuring that there was too much argument as to just what genus they should be referred, some excluding with reason, and on the basis of experience, the genus *Homo.*



DURING her lifetime Mrs. Herbert Hoover was actively interested in the Girl Scouts and in conservation of natural resources. Thus it is most appropriate that the Girl Scouts should launch a program of Lou Henry Hoover Memorial Forests on all camp and sanctuary property controlled by the organization. The most living of all living memorials is a memorial forest. R. W. W.

"Mountain goats and their kids followed the same trail daily along a certain broken ridge below us."

For one year Edmund J. Sawyer, naturalist-artist, and Mrs. Sawyer served their country as watchers in a government warplane observation station atop a six-thousand-foot mountain a few miles from the Canadian border in the State of Washington. It was magnificent isolation to do a duty at a time when the threat of enemy attack from the air seemed very real. Actually, however, the Sawyers were not alone, as this article reveals, but so far as the Government was concerned, it was happy to hear the every-two-hour message—



"Nothing to Report"

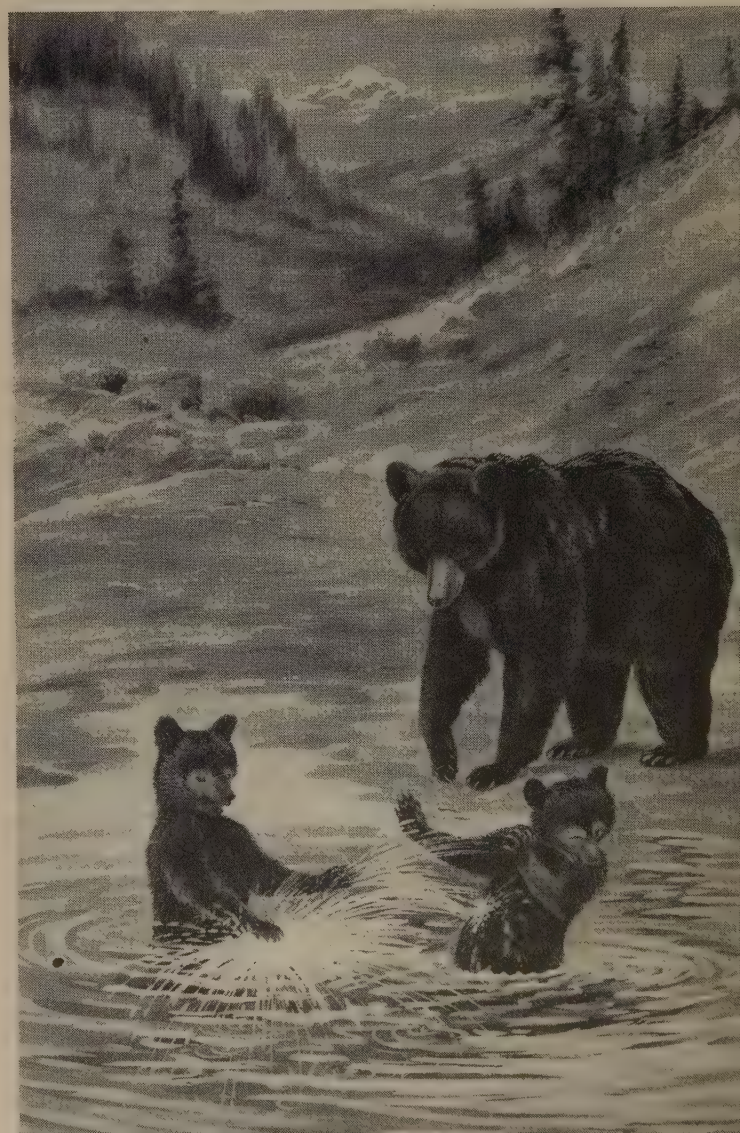
By EDMUND J. SAWYER *Illustrated by the Author*

"COPPER Mountain calling Glacier . . . Come in Glacier . . . Nothing to report . . . Copper Mountain signing off. Standing by."

Every two hours, day and night, this message, rarely varied, went out from the Copper Mountain station. For eight months snow ranged from six to fourteen feet in depth around the little house; much snow persisted all summer. For six months a tunnel was our only exit. Mountain goats, black bears and smaller animals were our only neighbors. Yet, on this mountain top, we found what the nations of the world had lost—peace, and civilization in more than name. To the Government no message from our eyrie could be more satisfactory than the brief, "Nothing to report." In truth, the three words were as ironical as they were false.

We left for our mountain top in mid-October, over some thirty miles of trail from Glacier ranger station in Mount Baker National Forest. A five-horse train carried our supplies, and we made good time, thanks to better than average trail conditions and weather. Our coming seemed well-omened, for wildlife along the way often courted our acquaintance. On the last ten rough miles two mountain goats watched us from the cliffs above, and a black bear crossed our trail. Four ravens croaked speculatively as they circled above our cocker spaniels. More obviously curious and decidedly more bold, a troop of Oregon jays flitted with us along the trail. Steller jays, varied thrushes—suggesting robins randomly splashed with black and bluish—a spruce grouse, a barn owl and a red-tailed hawk suggested that we were not to be alone.

Finally the trail, hugging the mountain side above sheer gorges, ended in our dooryard. This was picturesque, in a bleak, barren sort of way. Lichen-tinted, mossy rocks cropped out of the stunted heather and alpine grasses. A row of low, wind-deformed firs stood sentinel along one side of the cabin.



(Above) White-crowned and golden-crowned sparrows and juncos were dooryard neighbors at the station on the mountain-top. A black bear mother and her cubs put on a matinee performance every day for several weeks, the cubs bathing by the splash system, cleanliness being incidental or accidental

Clark nutcrackers were among the winter bird visitors to the observation post on Copper Mountain.

This was *our* eagle's nest, so different from that of the house painter whose evil genius had brought us, indirectly, to Copper Mountain.

No one had ever spent a winter on this mountaintop. The station was made for summer fire-spotting only. There was little enough time or material to provide against the rigors of winter, even should the latter prove reasonably like our most optimistic guess. Yet, cordially, occasional white-tailed ptarmigans and rosy finches announced themselves on nearby rocks, thus telling us the life zone we were in.

One winter visitor I had been hoping to have was a marten—or several. Fresh marten tracks had been seen along the trail some six miles from the station, ending three miles farther along. Passing weeks revealed no evidence of these furry neighbors, but toward the end of November my wife called me to see "some animal" in the shed, the latter a mere stormhouse improvised from window shutters. Nosing around and sniffing toward some bacon, placed too high for his reach, was the largest marten I had ever seen. Indeed, he was the marten to end all martens, for us at least, because, after he had loped away, no marten ever came close to the house again, even to the feeding station that was improvised and provisioned.

We were not long in discovering that the ubiquitous white-footed mouse was a constant guest. Whether your stay is a year or a night; whether you make your bed in a northern trapper's hut or in an overnight bough shelter; wherever you park your car by the wayside in the wilds, you are likely to find white-foot with you, gorging himself from your crumbs. But it is one thing to endure house mice in a city pantry, and quite another to be host to the clean, confiding and beautful white-foot.

Limited enough in our own eyes, and not conveniently replaceable, our food supply must have seemed otherwise to the relatively big, black eyes that stared in from our stormhouse, while the owners of those eyes clambered up and down the window on feet of almost flylike adhesiveness. Two or three mice would sit side by side, big round ears cocked forward, eyes bulging. It was easy, watching them, to paraphrase the familiar grace of the Old South: "food in de cu'bud, food 'gainst de wall, please, white folks, don't eat it all." And we did not. A special food shelf against the window, on its stormhouse side, provided food for the mice, and welcome and entertaining company for the airplane observer on the cold, all-night shift.

Of course some found their way inside. One white-foot formed the special habit of running back and forth all night long between two small cupboards on opposite sides of the room. Every night our little cocker, Chinky, wore himself out in a vain effort to catch this mouse, always ending up by resigning himself to lie and watch the mouse pass and repass at two- to three-minute intervals within two feet of his nose. After a month or two of this, we moved the cupboard, which had been used only for books and magazines and as a stand for a small radio, to find about a quart and a half of shelled rice nicely heaped inside the radio. Practically every grain of that hoard had been carried there right before our unsuspecting eyes and the gnashing teeth of Chinky!

A small weasel, snaking himself along as he squeezed between the glass and a windowledge snow drift, appeared about this time. The mice, after his arrival, diminished day by day until few remained. The survivors seemed to find some weasel-proof cranny, for the weasel, when last seen, was little more than the bedraggled, creeping shadow of his former lithe, active self. His home under our floor evidently became his tomb.

We became accustomed to the daily fight against drafts, wind and cold. The snow blanket, when one could reach it through the drifts about the building, was always a guest register to be scanned eagerly. Weasel tracks were almost ever present. Once a small coyote, or a fox, had skirted the house, passing within fifty feet. Occasionally a ptarmigan would leave the record of a hasty and profitless visit. Confident in their snowy disguise, these little wild hens of the Arctic would stand and stare down at the lookout as they clucked softly from a snowdrift twenty feet away. To make one out, we looked for the small dark eye or bill.

Two golden eagles, doubtless chiefly in search of

ptarmigans along our ridge, passed the lookout almost daily, sometimes as close as a hundred feet. Scores of times ptarmigans must have been in open view only a few feet below them. Yet, far from seeing a ptarmigan caught, I failed to observe evidence of a single case of discovery of one of the white birds by those piercing ever-questing eyes.

In most striking possible contrast to the ptarmigans were the ravens that every day, but with the greatest caution, visited our garbage dump. As the confidence of the ptarmigan in his snowy coat complements and makes effective that disguise, so does the extreme wariness of the jet-black raven serve for safety. He is as conspicuous in the snow as a fly in a glass of milk, and, but for his obvious awareness of that fact, he might sometimes find himself practically as helpless.

Completing the list of our winter bird visitors were Oregon jays, Steller jays, Clark nutcrackers and black-billed magpies, although none of these were frequent or numerous.

It was mid-April when wildlife first reflected a change of season. Townsend solitaires were now heard in a song that seems a blend of water ouzel, robin and catbird. Soon followed the still more significant flight songs of the same bird. A single male Brewer blackbird looked strangely out of time and place as he stalked about on the snow around the lookout.

It was May twentieth when I demolished the last of our tunnel's disintegrating snow roof, still leaving the six-foot snow walls. The great snow masses were now loosening on the mountainside, and the ominous crash and thunder of avalanches were familiar daily sounds, although never familiar enough not to start our two dogs barking and running in their direction. May twenty-fourth brought our first mourning-cloak butterfly.

Not until late in June did chipmunks appear in force close to the lookout, where the rock ledges were half bare of snow. Here, too, pipits were to be seen as they daintily stepped about gathering nesting material, the latter consisting chiefly or wholly of horse hair. Mountain goats were coming up from the lower levels. We saw the first on June twenty-eighth; three the following day. Wild flowers were now in evidence —yellow adder's tongue, wind flower, paint brush, yellow violets—all small and very short-stemmed, with adder's tongue the least so. The paint brush was of the most brilliant red I have ever seen in that plant. About this time phlox, white and pale blue, and exceedingly short-stemmed, was fast clothing the rock ledges two hundred feet below us, while conies were bleating from the slide rock.

When, on the evening of July fifth, black swifts several times sailed to and fro past the lookout the arrival of summer was undeniable.

Striped ground squirrels, and now and then a meadow mouse, joined the chipmunks in gleaning scraps thrown on the rocks close to the building. First to last, chipmunks were the most numerous of local mammals, always excepting little white-foot. A flock of Hepburn rosy finches numbering about thirty haunted our rocky knob for some days. Early in August a pipit, feeding a brood of well-fledged young, parked with her family for a week beside the lookout.

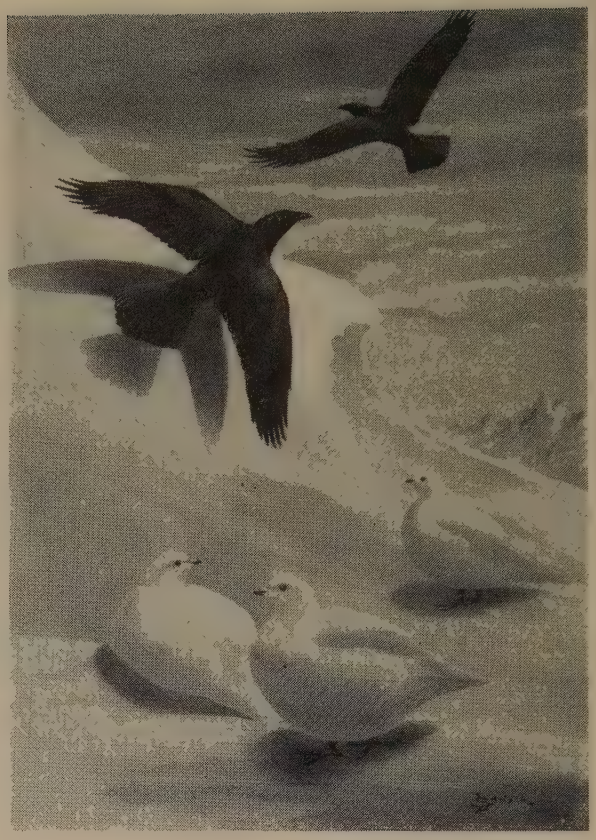
It was a night in late August when my wife's sudden loud shoo-ing and pounding on a window—for it was her turn at all-night duty—brought me out of bed with a bound. It seems a black bear had just put his head to the window that looked in from the stormhouse. I pushed the door open just in time to see bruin go out the stormhouse door with a three-pound chunk of bacon. Four one-pound bricks of precious butter had evidently preceded the bacon. Snatching a flashlight and a shotgun loaded with a blank shell, and clad in pajamas, I set out on the robber's trail. It was no use. The following night I watched and waited, gun at hand. Between ten and eleven came the bear. When I opened the door he turned broadside fifteen feet from me. Hoping the noise and the sting of the gun wads would be effec-

A red-tailed hawk seen as the mountain-top post was neared promised that it would not be too lonely.

tive discouragement, I shot at his flank. He called it a day, but not more.

One of our most unusual visitors was a pygmy owl. He alighted on the stake that supported our radio aerial. Very accommodatingly he let me sketch him at leisure before he darted into the fringe of low firs nearby. His dashing manner of flight was as finch-like as his size; in both he was strikingly unowlish.

Rufous hummingbirds, although somehow seeming out of place here, were nevertheless numerous and regular. For a long time I was puzzled to explain why these birds would follow and hover about my head every time I took a walk. Then the explanation came in a belated flash; the attraction was the bright red felt hat I invariably wore. It must have appeared to these hummingbirds a most promising flower, perhaps even some particular favorite of their beloved Tropics.



"In most striking possible contrast to the ptarmigans were the ravens that every day, but with the greatest caution, visited our garbage dump."

A mother bear and her two cubs richly repaid us in entertainment for all our bear troubles. Late in August this family first appeared, and for weeks gave a daily matinee from about two-thirty to three-thirty, always with one or more acts "not on the bill." The particular focal point for the bears was a little pool, nowhere more than thirty feet across, left by melting snow. From our west window we had a balcony view of this stage. On their first visit there was still a sizable island of snow and ice in the pool. The mother first dabbled one outstretched paw tentatively, as if trying the water for warmth. Deciding against a bath for one and all, she turned and walked away, one obedient if reluctant cub at her side. The other cub, having lingered strategically behind, suddenly splashed through the water to join mother and brother, assuming a demure manner that plainly said, "I ain't done nothin'." Bathing in the pool soon became the regular order of the day, usually the cubs alone indulging. They bathed each other by the splash system, cleanliness incidental if not accidental.

One day the cubs, wrestling on a steep slope, the mother as usual close at hand, locked themselves together and rolled like a furry ball down the slope and into a clump of dense, low firs. The mother, at first indifferent or perhaps complacently amused, scarcely raised her head from feeding on blueberries. Then and with increasing frequency she began to look down toward the fir clump. After some twenty minutes, and still no cubs, she strode down the slope and into the thicket. Out she came almost at once, the two cubs filing meekly at her heels. Bear mothers have a way with naughty children.

Mountain goats and their kids followed the same trail daily along a certain broken ridge below us, affording us a fine chance to note their ways in these travels. It was clear that the kids were supposed to keep between the adults. But occasionally, as children will, one would skip nimbly ahead of the parade, whereupon the line would halt instantly. You could fairly feel the alert anxiety that continued until the kid had skipped back to safety in the rear of the leader. The dread golden eagle is the arch enemy of the kids, and against that eternal menace the mother goat is constantly on guard. No eagle is a match for her dagger-horns, which are generally longer and sharper than in the male.

With mid-September golden-crowned Gambel's, and western savannah sparrows, together with juncos, formed a company that day after day fed on cracked grain scattered close to the lookout. Flocks of band-tailed pigeons and other flocks of horned larks appeared about this time, while hawks, mostly passing in migration, increased in number and kind. Not a day passed without a procession of red-tails, sharp-shins, sparrow, pigeon and marsh hawks; others were more rare. Canada geese passed directly over the station. Barn swallows circled about the building before continuing their flight toward the South.

Of course, it was inevitable that I should try to relate this whole wildlife pageant to the job for which I was being paid. Efforts to discover lessons that any warring power might heed, got me decidedly short of nowhere! I had passed a year among part of a vast society that, to our single warring species, would appear hopelessly incompatible. Yet here was peace. Perhaps there is no moral to be drawn, but for me, at least, a sufficient lure to Copper Mountain was the chance to share with goat and squirrel, ptarmigan, sparrow, marten, and white-footed mouse, a life where the margin of safety was not too great. And there were times when the margin was not quite broad enough for us to experience the maximum pleasure.

Against a setting of great scenic splendor, and overlooking at least a fifty-mile stretch of the Bow River Valley visible from this point, this alpine larch stands a lone sentry high on the trail from Lake Louise to the summit of Mount Fairview in Banff National Park. Note other individuals on the rocky slopes. Only a fragment of the valley view could be caught in the camera.

Tamarack Adventure

By WILLIAM G. SCHULZ

WHOEVER goes exploring for alpine larch is due for high adventure, for the quest will lead straight to timberline, and always to a region of wildest beauty, rugged and unspoiled. There is further adventure, too, in the fact that alpine larch is the least known and the rarest of all the high mountain trees in North America.

Frequently, among Nature students and mountaineers, one hears mention of such timberline species as white-barked pine and limber pine, mountain hemlock, alpine fir, mountain juniper, and now and then some tree of the lower forest belt that has crept up out of its natural zone to the limit of tree growth. But rarely do we hear any mention of *Larix lyalli*.

The main reason this tree is so little known, I believe, is that it grows only in a very limited range. It occurs in a few places in our northern Rockies, in the ranges of eastern British Columbia, in a few places on the Alberta side of the Canadian Rockies, and in the extreme northern Cascades. Even in these places it is found only in occasional scattered clumps.

It is the smallest of our three native American species of larch, or tamarack. The other two are the well known *Larix americana*, or *L. laricina*, of the northeastern states; and *Larix occidentalis*, the splendid western larch of northern Idaho, northwestern Montana, eastern Washington and Oregon. It is also in some respects the most strikingly individual of the three, in both its form and its general appearance.

There is also the Alaskan larch, sometimes erroneously thought of as a distinct species, but actually just a recurrence of *Larix americana*, which, like several other trees of our New England and north central states, spreads northwestward across Canada, dipping below Hudson Bay, then continuing on into Alaska. Black and white spruce and jackpine are other examples.

For myself, alpine larch had provided many an adventure long before I had ever met it "in person." Often I had encountered it during armchair rambles in tree, wildflower and botany texts. I had seen only one or two pictures of *Larix lyalli*, but when one day, a few summers ago, while rambling in the Canadian Rockies, I came across it, I recognized it at once! And my discovery was all the more enjoyable since it was totally unexpected.

The locale for this adventure was the beautiful mountain country in the vicinity of Lake Louise, in Banff National Park, Alberta. It was late June, but still little more than spring for that latitude and the elevation of 4500 feet. Blustery rainstorms had drenched this rugged region for days, and heavy gray cloaks of mist and fog hung close about the huge mountain massifs. What few tourists there were in the park chose to hug close the warm fireplaces of the comfortable lodges and hotels.

I had long wanted to make the climb up the trail

to Mt. Fairview. I had read the enchanting description of the view from its summit by Dr. James Monroe Thorington, the noted American mountaineer. Although only 9000 feet high, it thrusts its great rock mass 4500 feet above Lake Louise. This "little mountain", as Dr. Thorington calls it, offers some of the finest views of the Canadian Rockies. It is an easy climb—no feat of mountaineering. So, even though Fairview for several days had been completely hidden in thick fog, I started up the trail one rainy, raw morning just for the thrill of a storm-adventure in the mountains.

From near the shore of Lake Louise the trail starts abruptly up through a dense forest of spruces, firs and a tangle of underbrush. Twice I had to take shelter as violent hailstorms broke suddenly. The second time was when I was nearly at timberline, when the only "shelter" was a matted clump of low service berry and Labrador tea bushes.

At about 7500 feet both trail and tree growth end abruptly. A broad expanse of open, exposed slope, treeless, rather meadow-like, gravelly and strewn with boulders, spreads ahead. You are obliged to scramble up the first couple of hundred feet of this, then gradually it levels off. A magnificent display of mountain flowers flourished the day I was there—two or three species of anemone, the exquisite little white dryas, the white heather, some grasses and sedges, and a sprinkling of pink and lavender and yellow blossoms for variety. A few remnant snow patches were scattered about. It was a fine feast to delight the heart of anyone hungry for mountain wild flower beauty.

U. S. FOREST SERVICE PHOTOGRAPH

Here is a splendid example of a mature alpine larch, with a community of young seedlings and saplings nearby. This tree stands in Wenatchee National Forest near Boulder Creek pass at an elevation of about 6300 feet.

I had just come up into this clearing when the rain stopped, the storm clouds broke, and the sun came out. I now had superb views down upon the long sweep of the Bow River Valley, far below. I could also see a whole series of snowy mountain ranges on the far side of the valley.

Naturally I could not help lingering a while. I knew that before starting for the summit one first had to go over to the broad saddle separating Mt. Fairview, on the right, from another and lesser peak on the left. This saddle lies at 8000 feet elevation. Meanwhile, I relaxed a while in the flower garden. By lying perfectly still I was presently rewarded by seeing a marmot shuffling slowly from boulder to boulder, apparently foraging for food. For some reason, he did not whistle.

Soon I was afoot again, pushing on toward the saddle. I had gone only a few hundred feet when, to my surprise, I saw straight ahead of me in the saddle a clump of odd-looking little trees. Not more than fifteen to twenty feet high, they pushed crooked arms out from slim trunks. So scanty was their foliage that they appeared almost leafless. There was something strange about them, yet something familiar too. Of course—alpine larch!

I hurried ahead to get acquainted with my new tree friends. It was just as if they stood waiting to greet me. Coming up to them, I found that they grew close to the edge of a rocky, wind-swept ledge, which looked down into a gigantic V-shaped canyon, several thousand feet deep.

Standing in splendid array on the far side of the chasm, like mountains on parade, was a mighty assemblage of some of the largest and most famous mountain masses in the Canadian Rockies. Some were immense block-like structures, others rather pyramidal, all of them around 11,000 and 12,000 feet in height, and heavily snow-covered. Deep snow filled the gaps between each of the great massifs. They seemed but a stone's throw away, so close does one face them. Presently the silence was broken by a crackling, rumbling, roaring sound—avalanches. Large masses of snow and ice would loosen and go sliding down into the canyon, trailing long, ragged clouds of snow-dust.

Off to the right lay an immense field of gleaming white—the snow and ice fountain, or head, of the Victoria glacier, which, some 4000 feet below, plunges its broad-fronted icefall into the violet waters of Lake Louise.

For a long time I could only stand and gaze in awe, stricken dumb as all of us are in the presence of great wonders. After a while I began to browse among my new tree friends. I gathered a few specimens of fallen bark, cones, and needles, which I pressed into my knapsack. Then I finished the climb up the remaining 1000 (Continued on page 384)

A pair of Bonin Island petrels, one of the moaning birds that interfere with sleep on many of the Pacific islands. These birds are about the size of pigeons and seek the land during December, January and February.

The Moaning Birds

By LEWIS WAYNE WALKER

In our article, "Midway's Gooneys and Others" (June-July, 1944), brief mention was made of the wedge-tailed shearwaters, or moaning birds, whose eerie calls have been heard by many of our fighting men on Pacific islands. War service has carried Lewis Wayne Walker, naturalist and photographer of the San Diego Museum of Natural History, to these islands. He recently returned on leave with some splendid articles and photographs of the wildlife he had met. This immediate article gives us more on the moaning birds, and is one of several interesting and outstandingly illustrated features to come from Mr. Walker.

BECAUSE of an odd set of circumstances the birds of the Pacific islands that provide a pleasant diversion for servicemen all nest in the open, above ground. But those few that make the nights hideous live in hidden dugouts, out of reach of the shoes, canteens and invectives thrown in their direction in midnight hours. I had heard of these moaning birds from homeward-bound Marines, but, being familiar with the unobtrusive shearwaters and petrels of the west coast of Mexico, I felt that these members of the same family could not be so bad, which proved that it is never too late to learn.

Lights go out on the dot of ten o'clock in most of the island barracks. Until that time there are many noises such as radios blaring the news, the rattle of dice in a corner, or the muffled tap of a shoe heel being used to drive tacks in pin-up girl photographs. With darkness man noises subside, but the island is far from quiet. Suddenly there is a resounding thump on the clapboard wall. A wedgetailed shearwater, the largest of the moaners, has hurtled to the ground. Picking itself up, bruised but undamaged, it pushes along the ground on its breast to a clump of *Scaevola*, the roots of which are honeycombed with burrows. As the bird slides into one where its mate is incubating a pure-white egg, the moaning commences, first very low and then rising to a frenzied crescendo. Within the barracks sixty Marines are plotting, some aloud and others quietly, but all with murder in mind.

Some people never become accustomed to these avian cat fights, and the servicemen periodically lead raiding parties to eliminate the causes of the sleepless nights. The moaning bird population, however, runs into the tens of thousands. One bird destroyed seems to be replaced by two others. This is gradually realized, so the old timers just grumble, groan and cuss, somewhat like the birds outside.

During the day the moaning birds are rarely seen, and the only evidences of their occupation are the burrows, which collapse at every human step. Sometimes the nesting chambers break off clean and reveal one of the blackish inmates sitting on an egg. At other times one's foot just sinks into the ground to knee depth, permanently imprisoning the bird within.

The moaning bird digs down six or eight inches, using feet and bill, then turns the tunnel to run horizontally. There are many cave-ins but the birds persist until they excavate a nest site in the coral sand.

The winds of the following seasons shift the sands from these collapsed holes and reveal feathers or a desiccated skeleton, still on the eggs. Despite this appalling loss of life the birds seem just as plentiful as when the Marines first landed several years ago. Some of these burrow cave-ins are no doubt a natural hazard that has occurred through the centuries. On several occasions I have seen the weight of a fully-grown young gooney cause the collapse of a burrow, with the loose sand smothering the bird below.

Twilight, so short on these southern islands, is the time really to see the moaning birds in all their multitudes. December, January and February are the months of the small moaner, the Bonin Island petrel. These birds, almost pigeon size, flit about with an erratic, bat-like flight, and early in the season, when they are still undecided as to home sites, the beam of a flashlight will often reveal a score or more sitting around on the ground. A few will be squatting, paired off like love birds. Others will be busily digging, using both beak and feet to remove the dirt. In hours of watching, however, I have yet to see one of these burrows completed.

As a rule the bird goes down at an abrupt angle for six or eight inches, then turns the tunnel to run it horizontally. All those I have watched at this stage of house-building have pushed or pulled too hard, or have done something else wrong. A cave-in has been the result. After one of these minor catastrophes, the coral-covered bird will struggle to the surface, fluff its feathers a few times, and then attempt to repair the damage in the same hole. Such labor is the worst of all time-wasters. The coral sand, now broken into separate grains, just will not stay in one place. For every spoonful removed, two more cascade down the sloping side of the pit. They are tireless birds, however, and even though so much energy goes into this wasted effort, they keep on until they succeed at some other spot. A month after coming in by droves, they all have serviceable burrows with a single white egg at the bottom.

In early spring the large moaners, the wedge-tailed shearwaters, congregate on the islands from the open ocean, where they have spent the greater part of a year with no need for land. They are about twice the size of the Bonin petrels, and have white breasts and underparts, and black upper surfaces. Their flight is direct, and reminds me of the flight of their larger cousins, the albatrosses. They do not seem to have the ability to dodge poles, wires or buildings when in flight, and when barbed wire entanglements were first erected on the beach areas a great many shearwaters lost their lives on the sharp barbs.

Deserted areas in close proximity to the barbed wire pitfalls lead me to believe that the individual birds return to the nesting sites used in previous years. Birds that dropped low in these areas became entangled and were killed early in the Pacific war. Now, several years later, few new carcasses are to be seen in the wire; this is still just as deadly as ever, but out of the route or flyway of the birds that survived because, luckily, they nested in the center of the island.

Despite an awkwardness of flight, which permits a bird to crash into land objects, the shearwaters are masters of the air over the (Continued on page 384)

The Aye-Aye, or "Finger Animal"

By FRED KNAUER

THE so-called "Finger Animal", *Daubentonia madagascariensis* is an extraordinary beast found only on the Island of Madagascar, and rare even there. Everything to do with the creature is peculiar—the way in which it was discovered and named, the difficulty of classifying it and its odd appearance.

Madagascar is a large island, the flora and fauna of which differ radically from those of Africa. It is famous for its superb orchids growing on tree trunks, its enormous bamboo thickets, and its gigantic ferns.

The large beasts of prey and animals of the antelope family are absent from Madagascar. Even monkeys, inevitable inhabitants of the jungle, are not found there. In their stead are a sort of half-monkey, and many nocturnal stealthy creatures that live on insects.

By night the real life of the jungle begins. Extraordinary creatures, like some grotesque nightmare, leap from tree to tree. Piercing screams of the half-monkeys cut through the stillness. The true lemurs, the Makis, are found only on Madagascar. It is by no means impossible that the impenetrable jungles still hide creatures that have never been seen by man.

The finger animal was discovered by the naturalist Sonnerat, on his second voyage, 1774-1781. The natives, when shown the creature that he had just shot, and which even they had never seen, burst into astonished cries of "Aye! Aye!" And this, for the time being, became the name of the animal.

It was more than fifty years before the beast was again seen by European eyes. It was supposed to have become extinct, when, a hundred years ago, de Castelle, another explorer, captured one alive. It died, however, on the way to Europe. Its skeleton and skin, which were preserved, for some time perplexed naturalists, who could not decide as to its exact zoological classification.

Twenty years or so later (1862), a living finger animal, and a dead one, preserved in alcohol, reached London. Since then, a few isolated specimens have come to natural history museums. But it remains a great rarity. Hence I was particularly delighted when I became the possessor of a living individual, which stayed with me for five years.

At first sight this creature was about as unprepossessing an animal as could be imagined. This was especially true when it was seen by day, rolled into a ball with its long tail wrapped tightly about its body. Hissing and spitting, it resisted all attempts to make it change its position, and anyone who wanted to find out what the animal really looked like had to visit it at night. Then, seen by moonlight or by flashlight, this beast, climbing and skipping nimbly about its cage, looked like a grotesque nightmare.

This drawing of the aye-aye, "finger animal" or, scientifically, *Daubentonia madagascariensis*, shows its outstanding characters—long finger-like claws, bushy tail, large ears and grotesquely broad head set with staring eyes. It is found only on the Island of Madagascar and is rare even there, where it was first discovered late in the eighteenth century.

Imagine a sort of overgrown squirrel, the size of a rabbit, with long hair, mostly black, a head much too large for the body, immense ears, a blunt nose and staring eyes inclined forward. Notice the long tail, half the length of the body, and the animal's habit of shrinking from light, and you will have an idea of this amazing creature, appearing to be part monkey and part squirrel.

The most amazing things about this animal are the claws, which look like withered, partly crippled fingers, the fourth being the longest and the third the thinnest. It is almost impossible to realize that they were formed so by Nature, and not as the result of deformity. The large toes of the hind feet have a flat club nail instead of a long, curved one.

The long, curved fingers help to gather insects, which could hardly escape from their clutch. They

A photograph of a captive aye-aye. It is actually a lemur, but gave scientists much opportunity for argument as to just how it should be classified. The author, who had one in captivity for five years, describes it as no candidate for any mammalian beauty prize, and a pet with many interesting characteristics and habits, but with little charm.

aid the creature in climbing about in trees, where it makes its home. They are useful for scooping water out of tree hollows. This would account for the beast's habit of dipping its fingers in any liquid given it and then sucking them off afterwards.

The incisor teeth look like those of rodents, and are used similarly. In a single night my finger animal gnawed a deep hole about three inches in circumference in a thick log that was placed in its cage. The walls of the cage, and the poles it contained, were soon full of holes, and the cage had to be renewed every few weeks. Apparently such gnawing is necessary to the creature's well-being.

This animal was as quick and agile as a monkey. It climbed from branch to branch, or along the bars of its cage, holding on by any projection. Never did it run along the ground on all fours.

At dark the animal roused from its sleep and immediately began to eat. We tried to vary the diet as much as possible, giving it dates, fresh fruit, nuts and biscuits, boiled rice and milk. Its feeding routine never varied. First of all, the beast ate a cracker, then fruit, giving preference to apples. Then it cracked the nuts and finally tasted the milk, not by lapping but by thrusting its fingers in and licking them off until the entire dish was empty. This took only a few moments, so quickly and dexterously was it done.

After its hunger was satisfied, the animal began to lick and clean itself, pulling out any loose hairs. Finally it climbed around its cage and started to sharpen its teeth by gnawing steadily.

From its stealthy movements and noiseless snatching at food, no one would imagine the creature to have a loud voice, yet it did. One evening a dog was introduced into the room. The aye-aye was eating. Catching sight of the dog, it screamed at the top of its lungs, shrilly and with apparent terror. It tore up and down the walls of its cage and leaped about in the branches of the trees. But the next day it paid no attention to the dog. The sounds it made were hard to describe—high pitched and seemingly of two syllables—remote and strange as the creature itself.

In the five years of its captivity, the finger animal changed little in its habits, except that it gradually woke up earlier with the coming of dusk. It became lighter and lighter in color, and finally grew quite gray. The blunt nose became broader and uglier, and towards the end of its life looked bloated and swollen. Of course, I have no way of knowing whether it had lived out its allotted span of years, or whether, dwelling in the wild, it would have become older.

As a pet I could hardly recommend the finger animal. Its ugliness, its rarity, and its nocturnal habits all make it unlikely that it would ever become popular as a pet. From a scientific viewpoint, as a naturalist, I consider myself fortunate to have possessed one of the most unusual of animals.

Illustrations in various natural histories vary so much that it is sometimes difficult to believe they represent the same animal. Even zoologists have disagreed concerning the creature's scientific relationship. Some have considered it as related to the monkeys, while others, because of its gnawing incisors, have classed it as a rodent. It is really a lemur, but differing so widely from other species as to be referred to a separate family, its sole representative.

A Question

By RUSSELL PETTIS ASKUE

The fledgling's feathers fanned my cheek,
And then I felt him on my shoulder;
Did he mistake me for a post,
Or are the song birds getting bolder?

Modern fire apparatus is undoubtedly more efficient, but where is the thrill of the great fire horses galloping to the blaze? They, and other memories of the past, are gone from our complicated world of today. Barn raisings, husking bees, and other old-time practices of helping your neighbor seem things of the past. Gone, perhaps happily, are wax flowers under glass, cigar-band ash-trays and wood-burned pipe racks, but even they are the part of memories, often fond. Such a memory, filled with nostalgia and with a feeling that many will recognize as their own, is—

The Old Wood Pile

By MARY CARROLL

Illustrated by Garnet Jex

It is wonderful to have modern improvements, but being born in the seventies has its compensations in many dear and pleasant memories. The old wood pile seems to me to be one of the dearest memories of all. Our wood pile was bounded on the north by forest; on the east by the white house, and the large yard with white bee hives in its southeast corner, and the orchard; on the south by a large cornfield, through which a side road led out to the main road. To the west was the big old red barn, the barn lots, the far-reaching meadows and pasture, where cows grazed and from which place could be heard the tinkle of Old Kate's bell.

The kitchen door faced west, and opened on a tiny brick walk, which, in turn, led out to the wicket gate. This gate was secured by a heavy iron weight, and closed behind one with a bang. The fence around the yard was lined with tall maple trees, and from the gate one crossed the side road, and there was the old wood pile.

My first recollection of the old wood pile is of the year 1884. I was eleven that year. One night the family were all sitting around a roaring hickory fire. I had tired of my sampler and was watching the checkered shadows the fire made on the wall, and on the rag-carpeted floor. My mother and sister sat by the center table, knitting by the light of a kerosene lamp. I can still see the *National Tribune* and the *Youth's Companion* on its snowy-white table cover of linen and knitted lace. I hear the click of knitting needles even now, and see, on mother's lap, the finished woolen sock of blue and white. My brothers were reading. My father took off his glasses—specs they were called, then—shut up the old, worn family Bible with its padded leather covers. "Boys," he said, "we must get up the summer's wood; there won't be time to cut wood when spring work starts."

When I came from school the next day, father and my brothers were working at the wood pile. Beside it was the low-wheeled wagon, two big horses hitched to it, their harness creaking as they moved. My brothers were throwing off wood from the wagon; father was putting a wedge into an axe handle.

Every evening I could hardly wait to change my school dress of pretty plaid for the faded blue one and run for the old wood pile to watch the wood unloaded, see the various colored poles and logs pile up until I wondered how another stick could possibly be added, or how one family could ever burn such a huge pile of wood. It was then they quit hauling and began to saw the wood into stove-lengths with a cross-cut saw. It was a long saw with a handle at each end, and it took two people to run it. Then they split the wood to stove size, after which it was all piled up into neat rows.

You who have listened to the country sounds; known the country scenes; heard the lowing cattle; loved the wobby colts and calves that come in the spring, the squealing pigs, so smooth and soft, and the downy, peeping chicks; inhaled the perfume of apple and plum blossoms, the Sweet Williams and the new-mown hay, think back to the old wood pile. It had an odor that lingers in the memory; the fragrance of the freshly-cut wood; the colors of the different and beautiful logs. There was the red of the cherry, the black-brown of the walnut, the curly

"There was the big wooden maul out at the old wood pile, its head fashioned of tough hickory bound with iron. Its handle was worn slick and smooth. It was used as a hammer to drive the wedge placed in the tough logs to split them."

grain of the maple, the intricate pattern of the red oak. Its fragrance surpassed the perfume and spice shops of the Orient. Such exhilaration, such courage and inspiration as that old wood pile gave—such a peace and calm as our modern cities can never know.

Truly the prophet has said that man is like a tree. Trees have character, and so does the wood of the trees. Just as some folk must have years to grow and to put away childishness, so do some trees and some woods require years to become thoroughly seasoned. The willow grows quickly but is not very useful to mankind. Some trees grow crooked and knotted, just as do some people who refuse to look up and live. Some trees have little or no resistance, and often just give up the struggle and die, while others face the heavy winds and storms, and grow daily more sturdy and strong. It is much the same with the wood after the tree is cut. Some kinds resist the weather, keep their perfume and are seasoned daily into firmer, harder, finer and more valuable wood; others just grow lighter and lighter, and of less use to man, or decay away.

The walnut, hickory and oak gave out a long, steady heat when burned, and lasted throughout the night. Other woods did not burn well, and sputtered and fretted, or perhaps would refuse to burn at all. If they finally did burn, they gave out little heat, and their ashes, all loose and light, would remain to tell the story of poor specimens.

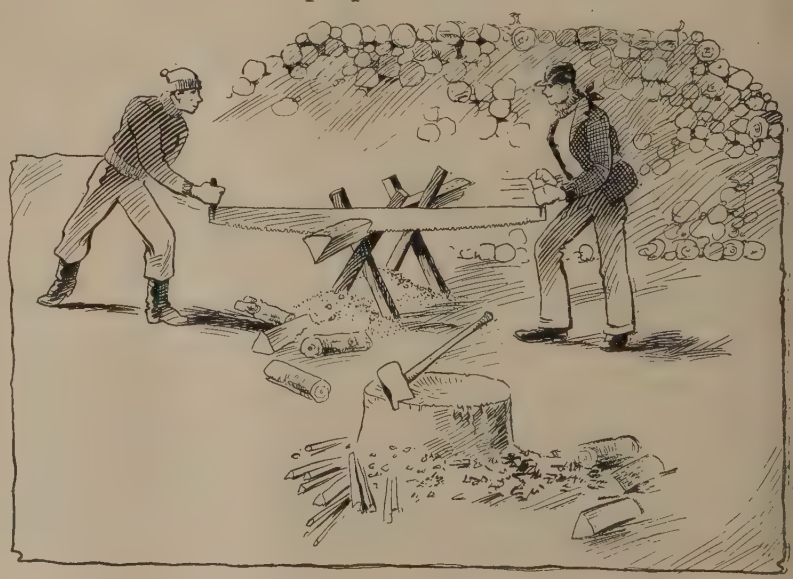
Among thousands of chips at the old wood pile were some of amazing and intricate patterns; others so exquisitely perfumed and tinted that it seemed a pity to burn them. There were distinctions, too, between the chips, just as between people. Mother would say, "Pick out the hard chips, and don't bring elm and the cottonwood. They aren't much for fire."

There were hickory, red oak, white oak, elm, maple, jack oak, black walnut, white walnut, box-elder, buckeye, paw paw, slippery elm, shagbark hickory, ash and locust. The hickory burned a licking, bluish color; burned confidently, gaining headway as it gave more fervent heat. There was no flame so brilliant, and sometimes, if the fire was not too great, we would hear a creaking, just like grandmother's old rocking chair. It had a ghostly sound, and my brother would wink his eye at me and say, "Hants," but my father told us it was only a hickory borer, deep in the wood.

The apple produced a cheery flame, and gave out a delicate, spicy odor, and the flames would curl in and out of the holes in the wood and play around and around, changing colors of red and yellow. Maple, too, made a cheery fire, while the cherry gave a pretty flame, and the locust burned a rosy color and gave off a pink fragrance that still lingers in the memory.

There was the big wooden maul out at the old wood pile, its head fashioned of tough hickory bound with iron; its handle was worn slick and smooth. It was used as a hammer to drive the wedge placed in the tough logs to split them. There was the old chopping block, used nobody knows how long. It, too, was of the toughest old hickory, seasoned by the years, worn down in the middle, mutilated, and marred with thousands of nicks and notches. There

"It was a long saw with a handle at each end, and it took two people to run it."



was the double-bitted axe stuck into the block's thickest part. How many times I used to try to get that axe out of the wood, but I could never budge it. And the dark red splotches down the sides of the block told their own story of raised dumplings and juicy drum-sticks. There was the old saw-buck standing off at the side, like a scarred and brave old veteran of many wars, the sawdust deep beneath it. One year I found a hen's nest under it, with twenty-three fine eggs nestling there.

When autumn came along, I used to sit out at the old wood pile and hull walnuts, pounding off the hulls and preparing the nuts to dry. Many a Saturday was spent there cracking the hickory nuts and extracting the meats for sister's sorghum candy, or for mother to use in her cooking.

One winter my father was sick and my brothers were gone. The last of March came, and there was scarcely a stick of wood left at the old wood pile. Then one morning team after team came driving up the side road to our house. Men came and brought their hired men, their sons and their neighbors. Women came, too, bringing well-filled baskets of delicious food. In one day a great pile of wood was chopped and hauled and split. They called it a "chopping bee." Then, that night, there was a party for the young folks. I hear them now, singing:

"King William was King James' son,
And, many a royal race he run."

They played Needle's Eye and Forfeits, and, late, oyster soup was served before our guests departed.

Often neighbors would come to visit us, for ours was a hospitable home, and mother never minded setting an extra plate. If there came a wet spell in corn planting time, folks would often come to spend the day, arriving in their farm wagons or high-topped buggies. After a big dinner the women-folk exchanged apron and quilt patterns, and the latest news, or talked of new babies, young chicks and turkey poults. Out at the wood pile the men-folk sat and talked. The little brook out in the calf lot, swelled by the recent rains, gurgled and tinkled. The crows cawed and the frogs croaked. The men discussed the new colts, and calves, their seed corn, the prospect of a good crop, or the latest news from Washington or the State capital.

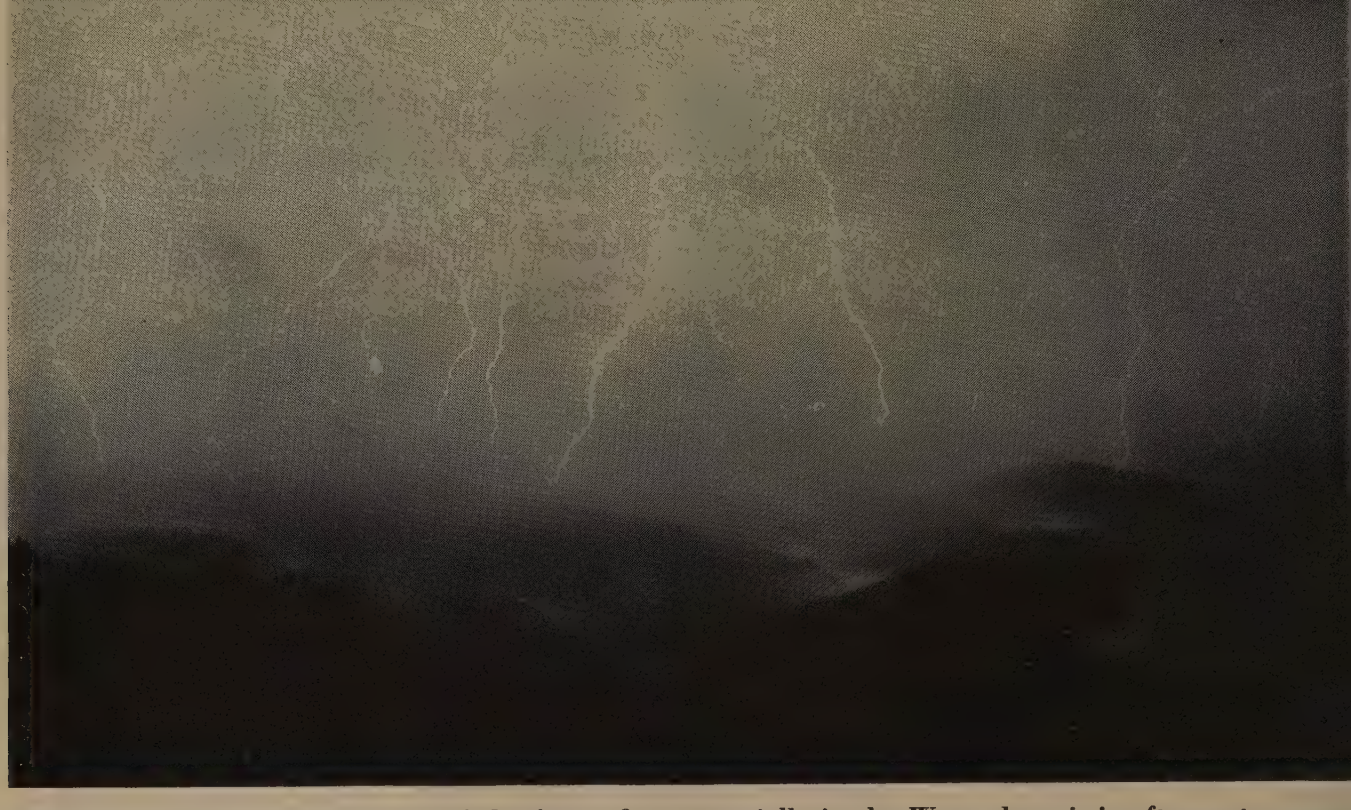
I noticed that many important subjects were "talked out" at the old wood pile. I heard mother say, "It is the way of the world. We will have to believe that Martha is making a wise choice. Sam is a good boy, perhaps a little too much spirit, but marriage will settle him down." And again: "There is nothing to do but have our son learn a trade. He is crippled so badly that he can never farm now." Another time it was: "I hate to think of losing our home. We started life together here in the tiny house of logs, and we set out the orchard and all the maple trees north of the barn and around the yard. The children were born here. It seems as if every foot of the old farm is hallowed ground."

"There was a big, round, yellow moon shining down through the maple trees, making strange patterns on the chips at our feet."

It was Christmas time, and the turkey was being killed out at the chopping block. There mother stood with her brown shawl over her head—the one she had inherited from great-grandmother. The snow was falling and the chips were all covered over. "This will be the biggest turkey I've ever cooked", she said. Father smiled and said: "And January 4 will be the biggest day of my life when I can go and pay off the mortgage and know, for sure, that the old home is still ours."

So the years sped by and I was sixteen. That year Jack Morris brought me home, one Thursday night, from spelling school in the little log school-house. Out there at the old wood pile he asked me to sit down with him on the logs—just for a few minutes. There was a big, round, yellow moon shining down through the maple trees, making strange patterns on the chips at our feet. It was a magic carpet. To me he was the *nicest* boy—my first beau. He was a king, and no queen with her golden crown was ever happier than I was at that moment. I heard him say, "Didn't you know that I love you?" I wondered how I could ever wait until Sunday to see him again, for he would go back to town in the morning to school.

So, time rolled onward, and every year I saw the wood pile heaped to its same (Continued on page 384)



Lightning sets about nine percent of the forest fires, especially in the West where it is often not accompanied by a deluging rain. This U. S. Forest Service photograph shows the elements on display in mid-July over the Umpqua National Forest in Oregon.

Forest Fire Weather

By EDNA H. EVANS

If the weatherman predicted fire instead of rain, the general public would think he had taken leave of his senses. However, meteorologists who belong to the U. S. Weather Bureau's fire-weather service are quite likely to make such a prediction. It is their job to study weather conditions so as to help guard the areas of timberland still remaining in this nation and Alaska from their major enemy —fire.

The job is a big one, and in doing it the Weather Bureau and the U. S. Forest Service cooperate. Fire-weather forecasters make trips through the forests, studying the climate and the lay of the land. They also attend forest ranger schools and learn, from the fire bosses, the techniques used in fighting fires. The foresters, as their share in the project, learn to make weather reports. They become familiar with weather instruments and make regular observations in order to give their meteorologist partners accurate and up-to-the-minute information.

Since it was first started in 1913, numerous "new wrinkles" have been added to the fire-weather service. At first the warnings were issued only from the district forecast offices in San Francisco and Portland, Oregon. Then offices in Denver, Chicago and Washington joined in the program, and, later still, fire-weathermen were assigned to Boston and Asheville, thus covering forest areas in east and southeast.

Congress recognized the value of the service and appropriated money for it. The U. S. Forest Service and state forestry agencies cooperated. Private lumber companies have come to recognize its value, and lumberjacks take considerable interest in the weather instruments in their camps. Sometimes they even form daily "pools" and bet on the temperature and humidity.

Of course the fire-weather service has not wiped out forest fires, any more than the Weather Bureau's hurricane warning service has prevented tropical storms, or its frost warning service has abolished freezes. But advance warnings of bad fire days have saved precious hours when the crisis actually arrives.

Fire in the forest is an awesome thing. Flames race through the underbrush with a crackling noise that expands into a roar whenever the blaze reaches an especially dry patch of brush. Gray ash and glowing cinders sail ahead of the flames, along with choking clouds of gray smoke. Out of hand, a fire may leap to the tops of trees and roar on as a "crown" fire.

Seen at close range the flames are yellow, but a short distance away they look blood-red through the smoky haze. In daylight the smoke covers everything like a blanket of gray. At night the flames glow redly upward, and their reflections bring out the treetops in sharp relief against the inky blackness of the sky.

There is terror abroad when the forest burns—terror for the wild creatures, terror for the humans who gather to battle the flames. Will the fighters be victorious before thousands of acres of pleasant green woodlands and millions of board feet of vital lumber are blackened and desolated? The answer to that question depends on a number of factors.

Back of the grimy men who battle the blaze—building fire lines with shovels, axes and sometimes bulldozers, digging trenches, starting backfires, spraying water where needed from tanks on their backs and wielding flaps and wet burlap—is an intricate system of wardens, rangers and fire watchers. Behind this organization stand the weathermen.

Preventing fires is much more economical than battling them after they have started. Foresters and weathermen both hope to do this. But, once a fire starts, it must be fought. The forester spits on his hands and goes at it. The weatherman sharpens his pencil, rolls up his sleeves and goes along, to watch the wind, the humidity and the other factors that can help or hinder the fight. Being human, he can hope for rain. Being a scientist, he will know when it can be expected, and, if conditions are not right for rainfall, he can make his plans without it.

The requirements for starting a forest fire are much less elaborate than those needed to stop it once it has started. Only a few things are necessary to start one—a forest, the right atmospheric conditions, and a spark. The larger the forest, the drier the air, the bigger the fire. And, to carry the progression further, the bigger the fire, the greater the cost in time, equipment and men needed to fight it, and the greater the loss in the end in invaluable resources.

No one can predict exactly when or where a fire will start. But knowledge of present and past temperature and humidity can indicate when conditions are most favorable for disaster. As these records have accumulated, charts have been compiled so that the forester no longer has to depend on his memory alone to recall how dry the woods were three years ago just before a fire started. Rain maps, too, show which areas have had a recent wetting and which have not. All this information helps in estimating current fire danger.

Since most of the nation's remaining great timberlands are in the West and Northwest, the fire-weather service functions mainly for that region. However, work is done along this line in the Great Lakes region, in New England, and in the Middle Atlantic states. The Southern custom of burning the woods each winter so grass will grow in the spring, has intensified the problem of effective fire control in the deep South.

In the West and Northwest the fire-weather season usually begins in June and the danger lasts until the middle of September. However, the weatherman can tell when the "right" conditions have been building up, even before the fire season actually opens.

For example, in the far West when the winter is unusually dry and spring comes early, the forest materials in foothill and upland regions dry out earlier than usual. This dryness stunts the normal rank growth in the foothills and leaves less potential fuel there for the summer. Still, the early dryness in the uplands makes them possible fire areas for a much longer period than the usual fire season.

The weatherman knows this because his weather

Fire leaps through the night on its roaring path of destruction, leaving in its wake blackness and desolation. Man is the cause of most forest fires, carelessness being a great factor.

U. S. FOREST SERVICE PHOTOGRAPH

U. S. FOREST SERVICE PHOTOGRAPH

The bulldozer is a valuable weapon in fighting a forest fire. Here one digs a fire line with the same efficiency it smooths a landing field on a captured Pacific isle.

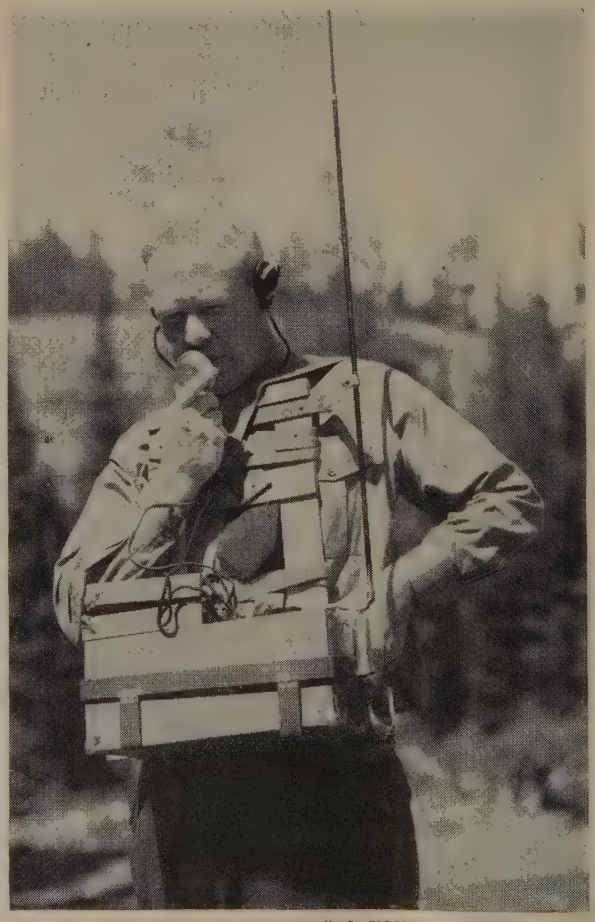
maps show conditions all over the Pacific Northwest. He sees the picture in even greater detail, for many forest ranger and fire lookout stations keep daily weather records. There are rain gauges, thermometers, psychrometers and anemometers at many an isolated fire lookout station through the forests.

Readings from many of these instruments are not taken at the same time as those at regular weather bureau stations, consequently they are not recorded on the official reports. However, there is an attempt made at uniformity throughout the forest area, so each forester-weather observer makes his observation at approximately the same time, morning and afternoon. His instruments, while not always as elaborate or expensive as those of the regular weather bureau stations, are tested for accuracy each year, and have been found valuable in rounding out the forest weather picture.

When the fire-weather forecaster sees hot, dry, windy days ahead, he sends out his warnings, usually a day or so before the weather actually arrives. Preventive steps are taken immediately. If the outlook is especially bad, the forests may be closed to all tourists and casual visitors. Lumber companies may be obliged to stop operations so that no stray spark from a donkey engine or a lumberjack's smoke can set off the conflagration. Hunters may be forbidden to range the forests.

Even when such drastic steps are not considered necessary, road crews and other personnel are held in readiness as potential fire fighters. Trucks stand ready to transport workers and equipment where they may be needed. Radio-equipped patrol crews are sent into the forests to be on hand quicker if and when trouble starts.

If the weatherman's forecast indicates that poor visibility may be expected, temporary lookout stations are manned between the regular towers, and airplanes may be used for an even closer patrol of the critical areas. Extra crews, more food and equipment are prepared to move in, if necessary, behind the regular forces. Everything is in readiness. All that is needed is the spark to set the gigantic tinderbox on fire.



U. S. FOREST SERVICE PHOTOGRAPH

Radio plays its part in directing the fighting of a fire, the two-way "walkie-talkie" providing contact on the fire front.

These elaborate preparations are rarely made in vain. The spark usually is forthcoming, from one source or another. Some camper or fisherman from the city, determined not to miss his outing, may slip by the foresters' cordon. Some lumberjack may knock out his pipe carelessly. Some farmer or rancher may decide to do a little brush burning at the worst possible moment. Some spark may escape from a locomotive. Or, should all these human agencies be lacking, there is still the lightning.

Lightning is the weatherman's baby for it is the only weather element that actually can start a fire. This unruly, unpredictable incen-

(Continued on page 386)

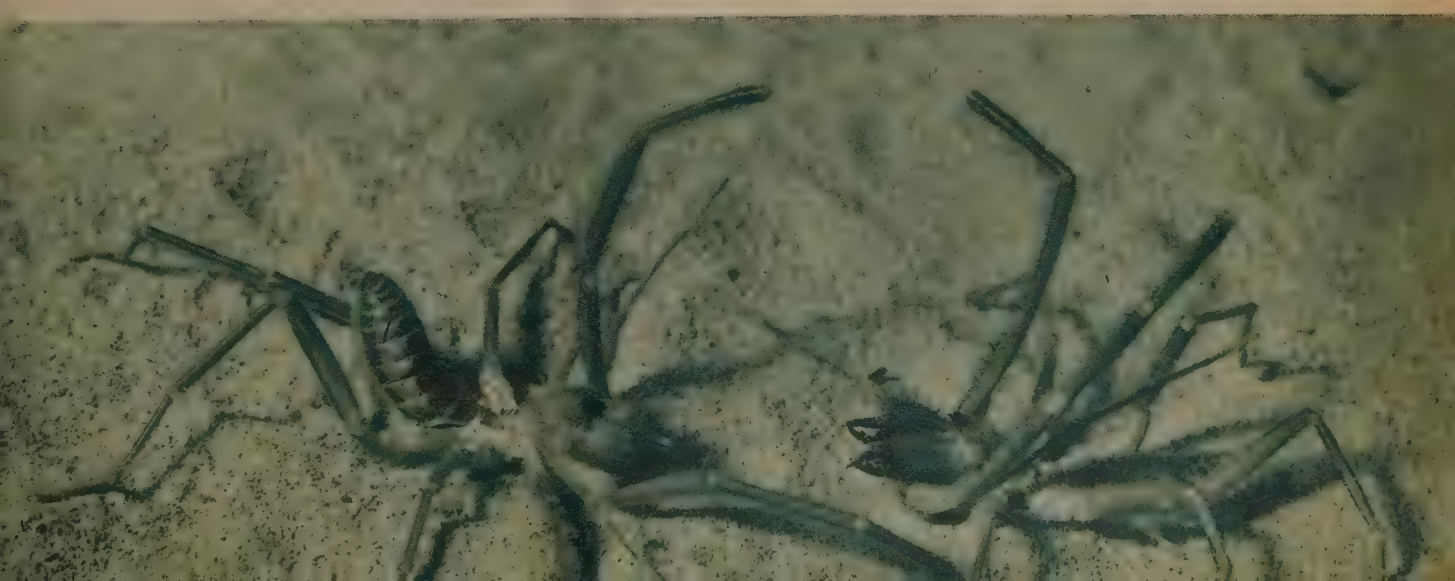
Ferocious and malignant in appearance, a praying mantis makes a meal from the soft body of a moth. Despite its formidable size and looks, the mantis is a harmless, interesting and beneficial insect, making an entertaining pet. For articles on the life and habits of the mantis, see Nature Magazine for October, 1933; October, 1935; and August-September, 1944.

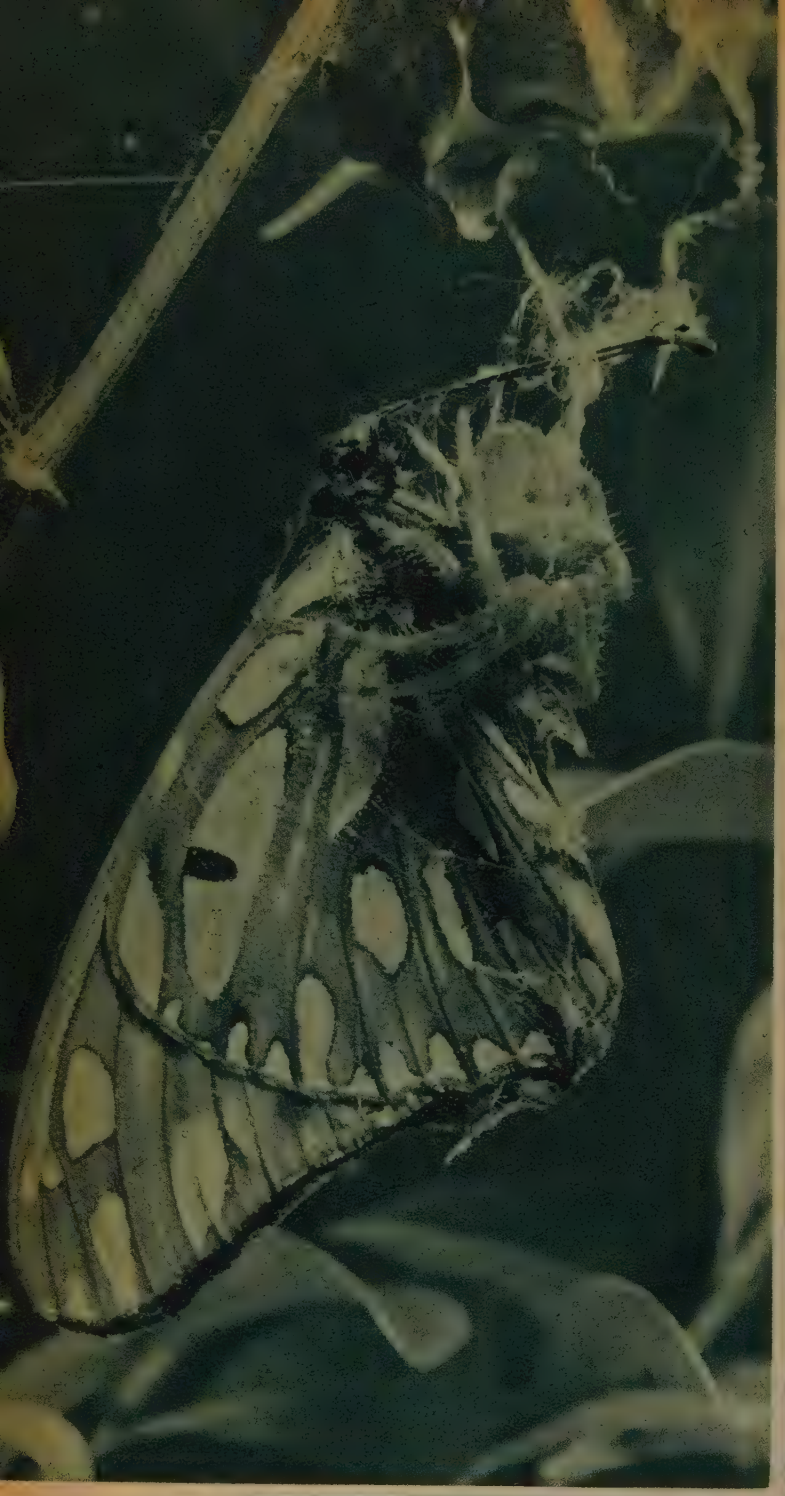
No Holds Barred

A picture story of the struggle for life among insects and spiders

By RICHARD L. CASSELL

Two solpugids square off for a momentary battle. They belong to the spider class, but differ in some ways from true spiders, and do not spin. They are variously known as sun spiders, wind scorpions, hunting spiders and vinegaroons, the latter a misnomer since this popular name belongs to an entirely different animal. For further information about solpugids see Nature Magazine for April, 1944.





An orange garden spider throws its encircling web about the body of a butterfly, thus laying by a meal to be enjoyed when needed. This spider is a beautiful predator and a frequent inhabitant of many summer gardens.

A black widow spider traps a Jerusalem cricket. Although the prey is powerful it is unable to escape the great strength of the web of the spider, which has successfully snared and hob-tied its victim.

The dragonfly is an insect predator that seeks tiny quarry among insects, capturing them while in flight, much as do swifts and swallows among the birds. Dragonflies are our allies in controlling insects, the larvae of the dragonfly eating mosquito larvae on the water and the adult dragonflies taking adult mosquitoes on the wing. Superstitions about the dragonfly sewing up ears, and other old wives' tales are, of course, just silly. Actually, these insects are friends of man.

A banded garden spider envelops a cabbage butterfly in Nature's straight-jacket. This beautiful orb-weaver has rolled its victim into a section of web where it can be stored alive for a limited time to serve later as food. Every cabbage butterfly thus ensnared means one less to infest the Victory Garden.

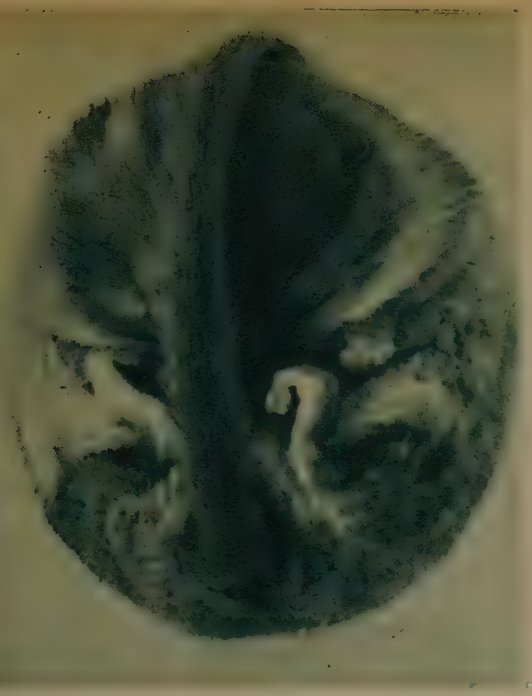
A small-backed green spider and its prey. Its method is a rapid attack on its quarry, which appears to be paralyzed within a second or two after it has been bitten by the spider. Thus the victim may be consumed at leisure, or set aside for eating when the spirit and appetite may move the predatory spider.

A robber fly and a captured honey bee, which the larger of the robber flies closely resemble. The robber fly is the falcon of the insect world. With a rush of wings, it dives upon its prey, stabbing it with a proboscis that is not long but stout and efficient. The victim is often captured in mid-air, or caught on leaves, and carried away to a spot where the vital fluids may be consumed at leisure. Often the victim is larger than the robber fly itself. The similarity of the insect to the peaceful bumblebees may aid in their getting close to prey. Also, it may be a protective device of Nature, the robber flies being avoided by insects that fear the sting of the bee. The larvae of the robber fly are also predacious, feeding upon other larvae.

A crab spider lies camouflaged in a flower, with the petals of which its color merges. Lying in wait for any busy insect, the spider captures a venturing fly with cat-like stealth and lightning speed. The spider is usually marked with pink or red on a background of yellow or white, depending upon the flower within which it lurks. It makes no web, but may wander from flower to flower if hiding places are limited. It also may stay in a single flower for days if it is undisturbed.

The Dormouse

Photographs from Authenticated News



At the left is a dormouse curled up in a tight little ball, asleep. Its head is completely hidden and its ears closed to disturbing noise, its furry tail curled as though to tie the little dormant ball together. At the right is a nest of a dormouse built in a tree and carefully constructed of moss and leaves. Round in shape, it is adapted to the sleeping position of the hibernating dormouse.

THE acquaintance of most Americans with the dormouse is probably confined to *Alice in Wonderland*, and many probably have wondered just what this little animal is, in fact. Dormice are, of course, rodents, small animals resembling ordinary mice and rats in form. In their habits of eating and of living in trees, and their furry tails, they differ from many other members of the mouse tribe.

Dormice are found in Europe, central Asia and Africa, and remind one of tiny squirrels. One, in fact, is called a squirrel dormouse because its furry tail is very bushy. This species is more savage, larger than its relatives and usually nests in tree holes.

The dormouse pictured here is the common English and continental species, called by scientists *Muscardinus avellanarius*. It is the smallest mammal in Britain, resembling the house mouse in size. It is fawn-colored and its tail is well-haired. It lives on nuts, acorns, seeds, grain, and on caterpillars and bees, sitting up on its haunches like a squirrel to munch at its meals. It seems also to like fruit and eggs.

Its name of dormouse comes from the French verb *dormir*, which means to sleep. It is thus well-named, for it hibernates in its neatly-woven ball of a home for almost six months of the year. When spring comes it unrolls and the mother dormouse builds a breeding nest for her young, usually in a bush. There are customarily four young, which are born blind. There appears to be only one litter a year.

Dormice make interesting pets and are tamable. They do not, however, appear to prosper very long in captivity.

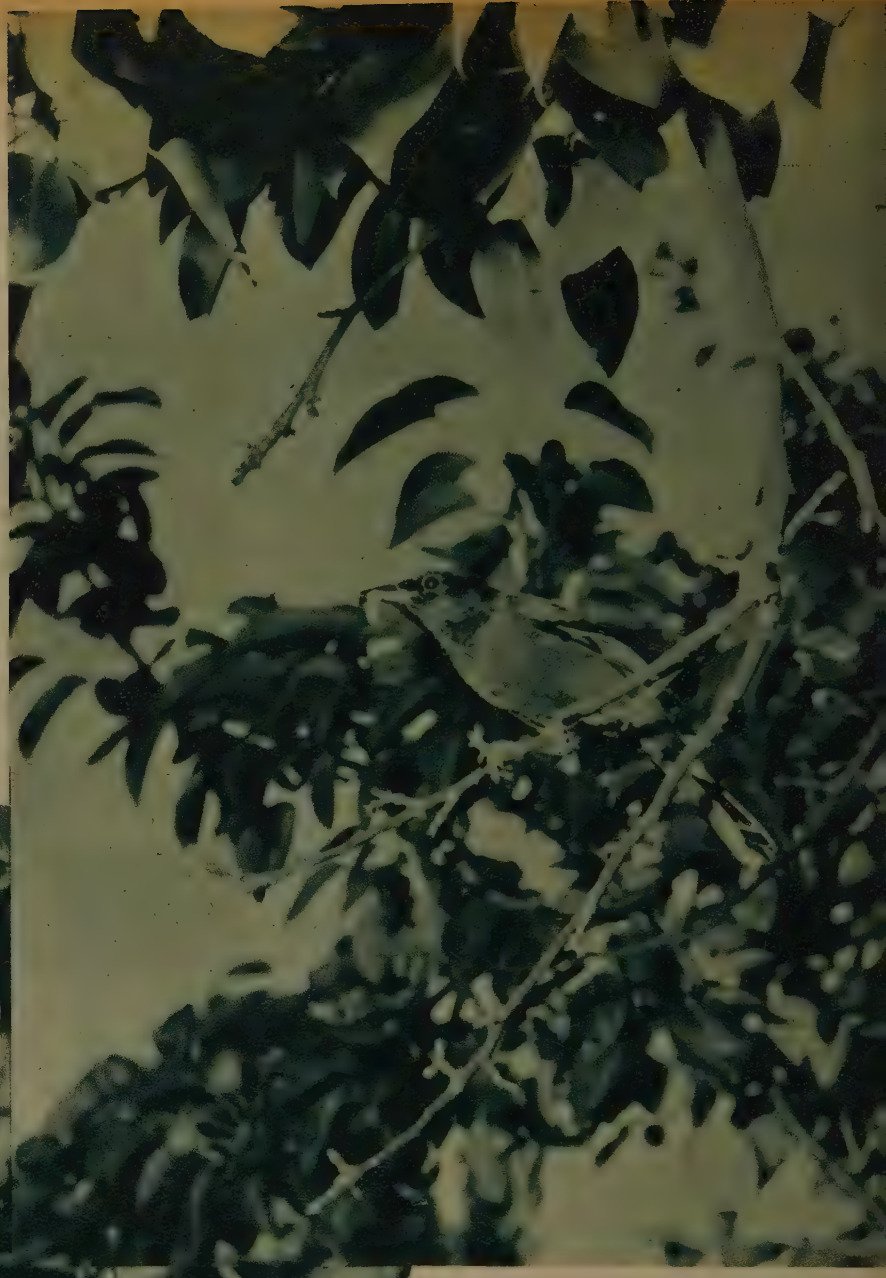
A dormouse clings to a branch end, while, below, one peers from its summer nest of grass and hay. Although the nest seems carelessly built, it is remarkably sturdy.

The dormouse at the right is going through the stretching exercises that follow the long winter sleep curled up in the characteristic ball shape. With tiny feet clinging to a twig, the little animal tenses and relaxes its muscles so that they will work as smoothly as they did in the garden the summer past. Anyone would be stiff in the muscles if rolled up in a ball for a sleep of six month's duration.

Orchard Orioles

By GEORGE .A. SMITH

Photographs by the Author



Father Oriole was more cautious than his mate, but the photograph above shows him with lunch in his beak. At the left the young birds display eager anticipation.

ONE of my favorite spots for bird study is a meadow near my home in Quarryville, Pennsylvania. On one side of the meadow is a grove of trees, and near the trees is a small lake formed from an abandoned limestone quarry. Along one side of the water the trees include such fruiting varieties as mulberry and wild cherry; on the other side is a clump of thornapple bushes and blackberry vines. My favorite tree is a wild pear of the Seckel variety, standing alone a few hundred feet from the other trees.

One summer I found in this tree nests of a yellow warbler and of a Baltimore oriole. The nest of the latter was easily identified by its pendant shape, and the abundance

oth parent orioles on the perch that they eemed always to use when approaching the est with food, or leaving it. At right, the other bird visits with her offspring.

f string used in weaving it. When visited the pear tree the next spring, naturally looked to the same limb or the same Baltimore oriole nest. ure enough, there was a nest, but was smaller, and built entirely of rass carefully woven into a basket ape without the aid of string. Had e beautiful Baltimore suddenly one in for a new kind of nest archi-ecture?

Of course not, but by coincidence pair of orchard orioles had selected e same site for their home. The ale bird, clad in dark russet and ack, was different from his beauti-l and colorful cousin. His voice, o, was sweeter and more subdued. As though to cooperate with my terest in bird photography, the orioles had built at a spot only a few feet from the reach of my hand, and three young birds were raising their heads for food on the approach of the mother bird. The female soon became accustomed to my presence, and continued to feed her young while I sat quietly on the ground about twenty-five feet away. The father took less of a liking to me, approaching the nest from the opposite side, and lingering only long enough to deliver his beakful of insects.

Watching the family affairs of these orioles, I saw that both parents invariably used a nearby perch when approaching or leaving the nest. This seemed the spot on which my camera should be focused.

A few days later I carried to the tree a stepladder, my camera equipment and remote control device. These contraptions interested a herd of grazing cattle so much that they gathered to see the proceedings.

Among them was a hefty bull, whose interest I did not appreciate. I beat a hasty retreat, and the bull inquisitively knocked over the ladder before departing.

Later I took a bull-chaser-away with me, and got things in order to pry into orchard oriole activities. The pictures here were the result. The photograph of the female shows her apparent lack of fear of me and my equipment, and that of the male his more cautious approach. On one of my later visits to the nest the young had just left home, and one little fellow was perched on a limb only five feet from the ground. I "shot" him. I also was able to photograph father and son. Synchronized flash was used in all cases because the foliage was dense.

One youngster had just left the nest and was perched on a limb about five feet from the ground. At right, Father Oriole gives his son some advice on this flying business.

As We See It

★

Scuttling the Antiquities Act

There has been a tremendous artificial fog, manufactured by partisan politics and local prejudices and blown up to obscure the facts of long-established policy with respect to our National Monuments. It is, indeed, so thick a fog that it is timely, and necessary, to dispel it by the publication of such an article as that which appears on the immediately succeeding pages of this magazine. There the reader will find the story of the Antiquities Act, under which the American people have preserved for posterity areas of scenic, historic and scientific importance beyond value.

Acting under this law in 1908, Theodore Roosevelt created an 806,000-acre National Monument including the Grand Canyon of the Colorado. Few Americans, whether or not they have viewed the majesty of this now National Park, would deny that it should have been preserved from exploitation. Yet it was the subject of bitter opposition at the time of its creation, and the battle over mining claims held in the Canyon by Senator Cameron is a high mark in conservation history. The Supreme Court of the United States, deciding the Cameron case, affirmed the legality of the Act and the action of the President in preserving the Grand Canyon as "an object of unusual scientific interest."

On the whole it would appear from the record that the American people have been well satisfied with the way in which seven presidents—from Roosevelt to Roosevelt—have acted in their interests under this law. Then came the Jackson Hole controversy—*and the fog.* President Franklin D. Roosevelt proclaimed the Monument. This action became the butt of partisan politics, the subject of hearings, legal action, and, finally, legislation. A bill to abolish the Monument was passed by Congress, after debate in which facts were lost in the swirling mist of prejudice and misrepresentation by opponents of the Monument—and the President. Mr. Roosevelt gave the bill a pocket veto and sent Congress a logical message setting forth his reasons, and suggesting a reasonable solution.

The Jackson Hole controversy is not, however, over, although it should be. The bill to abolish it has been reintroduced by Representative Barrett of Wyoming, and he has authored another measure to transfer the public land in the Monument to the Forest Service. Furthermore, the Jackson Hole issue has loosed a flood of other bills directed at the Antiquities Act itself. One of this is S.664, introduced by Senator Robertson of Wyoming and seeking, by indirection, to wipe out the Monument.

This bill would amend Section 2 of the Act by establishing an involved procedure for obtaining the consent of a majority of a specified group of state and congressional officials before a President could establish a national monument. It would, if passed, make its effective date December 7, 1941. The Jackson Hole monument was established on March 15, 1943. Senator Robertson appears to have no objection to the many other monuments that have been established during the 39 years the act has been in effect. Perhaps he did not realize what a high compliment he was paying the act when he singled out for abolishment only one area set aside under the law. If that can be taken as an acknowledgment that the results that have flowed from passage of the Act of 1906 have been excellent, the facts bear it out. Rarely has any legislation been productive of such accomplishment in the field of conservation. Its value in providing immediate protection to priceless objects is shown by the fact that Grand Canyon, Zion, Bryce, Lassen Volcanic, Carlsbad Caverns and Olympic are among the national parks that were given the protection of monument status, in whole or in part, before Congress made national parks of them.

The authorization contained in the Antiquities Act makes it possible to extend special protection to areas of scientific and historic importance, and to do it reasonably quickly. Is it conceivable that there would have been any such record of rescue of precious national possessions from the destroyer or the exploiter if Congressional action had been required? Anyone familiar with Congressional procedure, and with the local pressures that so often slow it up or halt it entirely, knows better.

The President can establish monuments only on lands owned or controlled by the United States—and that means the people of all the United States. Seven presidents have exercised this authority, and they have used it in the interest of the owners of the land—you and me. The same justification exists for it today as when the Antiquities Act was passed in 1906. Those who share this conviction of ours can do a service to conservation by making their beliefs known to those who represent them in the House of Representatives and Senate. The act must not be scuttled.

Mount Moran, in Grand Teton National Park, viewed across the Buffalo Fork of the Snake River, in Jackson Hole National Monument, the most recent Monument created under the Antiquities Act.

Your National Monuments

By NEWTON B. DRURY

Director of the National Park Service

THERE are, perhaps, millions of Americans for whom "monument" has a very limited connotation. In their minds, mention of the word establishes a picture of a shaft of granite, or a bronze general on a bronze horse, or some such obvious and relatively simple object. The fact is, however, that a monument is basically a reminder of some person or event, or series of events, of the past, in either human or natural history, and may assume varied forms with entire appropriateness. By that meaning, the term "National Monument" is a wholly correct designation for the components of the extensive group of federal areas that have been established during the past 39 years, and which have become so important a part of the National Park System.

Devils Tower, the first of our National Monuments was established by Theodore Roosevelt in 1906 under the provisions of the Antiquities Act. Located in Wyoming, it preserves an 865-foot tower of five-sided columns of volcanic rock, interesting to scientists as an example of an igneous intrusion.

That system today contains 168 areas. Of these, twenty-seven are national parks, and all but one or two of this group are characterized by superlative exhibits of natural scenery. There are 84 national monuments, established for different reasons, although many of them are as spectacular as the national parks. The remaining 58 units in the system are chiefly historical areas in several categories.

The Act for the Preservation of American Antiquities, passed in 1906, provided that

Carlsbad Cave in New Mexico was a National Monument for more than six years before becoming a National Park. It is one of the world's most extensive and spectacular caverns.

"historic landmarks, historic or prehistoric structures, and other objects of scientific or historic interest," if situated on lands of the United States, could be set aside for preservation by Presidential action and designated "national monuments." The act specifies that the limits of a monument "in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected."

Use of the authority has been remarkably free from partisan influences. Up to the time of President Truman, every President since the act was passed—two Democrats and five Republicans—has acted under it frequently. Careful selection, to make certain that the areas designated had genuine national significance, has characterized these actions in the great majority of cases.

Passage of the act was a major step in providing protection, or the means of protection, for some of the most valuable possessions of the people of the United States. Archeologists, historians and scientists had long felt the need of such legislation, and it had the backing of a notable group of them. As for President Theodore Roosevelt, who had the pleasure of signing the act, it was "right down his alley." In the less than three years that he was in the White House after its passage, he established 18 national monuments containing more than a million and a half acres of land and water. Altogether, the authority conveyed by the act to establish monuments has been used 131 times—82 for the creation of new monuments, 42 to enlarge those already established, and 7 to effect reductions, usually for administrative reasons.

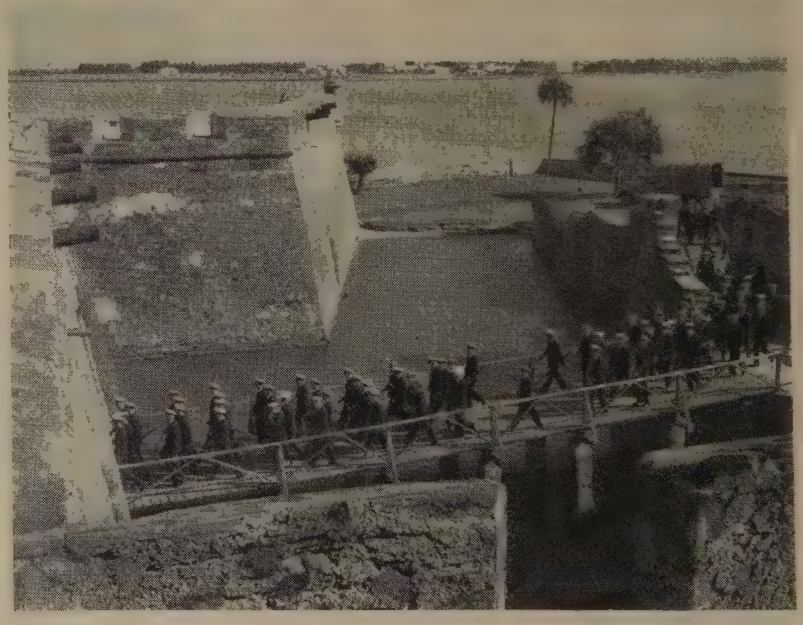
President Hoover, during his four years in office, gave this special status to a greater acreage than any other president. He established nine monuments, containing 2,147,639 acres; and he added 1,687,129 acres to those previously established, by 10 additional proclamations. President Franklin D. Roosevelt put 11 more monuments on the list, containing 1,494,767 acres; on 19 other occasions he added 1,728,315 acres to existing monuments. Altogether, there are today in the national monuments in the National Park System, 3,905,802 acres in continental United States and 5,697,205 in Alaska. That is, undoubtedly, a considerable estate; but for the continental United States it is less than two-tenths of one per cent of the total area, and for Alaska slightly more than 1.5 per cent. An overwhelming percentage of the total is land virtually valueless for any other purpose.

The essence of the monument, how-

Navajo National Monument in Arizona is typical of those preserving prehistoric dwellings and contains three of the largest and most intricate cliff dwellings.

Looking across the dunes of powdery gypsum that give White Sands National Monument in New Mexico its name. Below, young officers of the U. S. Coast Guard file across the moat of Castillo de San Marcos to their graduation exercises. This oldest masonry fort in the United States is protected as a National Monument. It was built by the Spanish to protect St. Augustine, Florida, the first permanent white settlement in this country. It was long known as Fort Marion.

ever, is not found in acreage figures, but in the scientific or historic qualities they possess, most of them beyond price. Those who have been fortunate enough to view the vastness of Glacier Bay, in Alaska, have had the novel experience of returning to the Ice Age. There they find great fields and rivers of ice, still carving the earth's surface with their inexorable power; and complementing this massive process is the march of vegetation as tree and shrub extend their foothold toward the receding ice. Only on the grand scale can the extent and the might of the processes at work there be observed with full satisfaction. It is difficult to get there, but I hope the day may be not far distant when improved transportation will bring it within the reach of large numbers of visitors. It is as awe-inspiring scenically as it is interesting from the scientific standpoint.



If I were to choose from the monument family the one which seemed to me to contrast most sharply with Glacier Bay, I think it would be the little area, established by President Coolidge in 1924, that lies up against the ancient city gates of St. Augustine—a pleasant expanse of grass dotted with the deep green of scattered clumps of cedars. Here, more than 100 years before the Declaration of Independence, the Spanish erected the Castillo de San Marcos, for many years called Fort Marion, as a defense for the little village nearby and to protect the trade route extending up from the Spanish Main along the Florida coast. The Spaniards were great builders; the Castillo is a splendid example of the way they built, and how their handiwork has endured. It is constructed of coquina, a rock composed of millions of tiny, naturally cemented shells, which they quarried from Anastasia Island, just across the bay from the fort. Square, with massive bastions at each corner surmounted by small circular watch towers, its walls are from 9 to 12 feet thick, and the whole is surrounded by a 40-foot moat. Those who attacked it found it a nut they could not crack. Governor James Moore of South Carolina tried it in 1702. Thirty-eight years later Oglethorpe subjected it to 27 days of artillery fire, then gave up the attempt. During the Revolution, the British imprisoned a number of prominent Americans there, including three signers of the Declaration of Independence. Later, after it and Florida came into American possession and it was named Fort Marion, it was the prison of Osceola and other Semi-

Great rivers of ice flow from among lofty peaks in Glacier Bay National Monument, Alaska. This area was set aside in 1925 to preserve its great tidewater glaciers and its interesting exhibit of the early stages of post-glacial forests. Below if one looks closely one may see two tiny human figures below the nearer of the two great natural bridges that are protected in Arches National Monument in Utah, which contains extraordinary examples of wind erosion.

nole leaders; later still, of many of Geronimo's Apaches.

The first monument to preserve a prehistoric site was Montezuma Castle—which has no connection with Montezuma. Situated in Arizona, Theodore Roosevelt proclaimed it in December, 1906. Since then more than a score of this type have been established. In some, the primary purpose is to protect distinguished remains of those Americans whose history is written only in the structures and artifacts they left behind them; others are primarily of high scientific value, with incidental but important prehistoric values as well. Our heritage of such reminders of those who preceded us on this continent is extraordinarily varied; where they have not been disturbed by the pot hunter or those who were ignorant of their significance, the archeologist has been able to recreate surprisingly vivid pictures of the life of these early people—their agriculture, their arts, their sports, their religious observances, their migrations, and the events and influences that caused them to disappear from once populous and flourishing villages and towns.

These prehistoric areas in the monument system contain remains of many different kinds. Chaco Canyon, in New Mexico, contains a dozen interesting ruins. Two of them, known as Chettro Kettle and Pueblo Bonito, are large D-shaped structures each five stories in height and containing hundreds of rooms. Pueblo Bonito, 670 by 315 feet, probably housed as many as a thousand of the ancestors of the present Pueblo Indians at one time; indeed, until 1887, this "apartment house," occupied during the 11th and 12th centuries, was the largest single residence structure in the world.

Very different are the cliff dwellings, nestling on recessed shelves of the sheer cliffs which have been carved through the deep beds of sedimentary rocks all over the Southwest. Mesa Verde National Park probably contains more of these and other remains of prehistory than any other area of comparable extent; but those in Montezuma Castle, Navajo and Tonto, in Arizona, and in Gila Cliff Dwellings in New Mexico include remains no less significant to the unwritten story of these vanished Americans. The several different kinds of dwellings occupied by the early inhabitants of the Pajarito Plateau, west of the Rio Grande in northern New Mexico, are well represented at Bandelier. They include (Continued on page 386)

The Museum Goes to the Little Red Schoolhouse

By JOHN RIPLEY FORBES

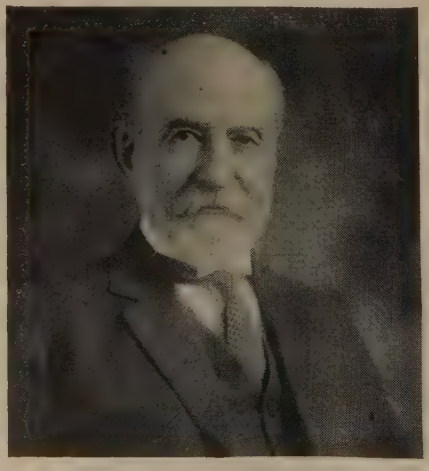
Children at the Geneva County, Alabama, Colored Children's Museum learn about the golden eagle from the field curator of this pioneer museum for rural youngsters.

IN THE window of a little art gallery in Greenwich Village, New York City, hung an oil painting of a moose. A distinguished-looking gentleman stood admiring it; then went in to inquire about the identity of the artist. The admirer was William T. Hornaday, then Director of the New York Zoological Park; the artist was Carl Rungius, a young immigrant recently arrived in this country and destined to become one of its greatest painters of wildlife.

From this developed a close friendship; a partnership of naturalist and artist, the one giving encouragement and scientific advice to bring to its fullest flower the talent of the other. And Carl Rungius gave the moose picture, which had brought them together, to Dr. Hornaday.

The artist was only one of many young people who knew the guiding hand of William T. Hornaday. As young men, William Beebe and the late Raymond L. Ditmars joined him as curators at the new zoo. The author, last protégé of William T. Hornaday, owes much to this great naturalist, whose fatherly advice, encouragement and inspiration contributed largely to whatever success he has achieved in the children's museum movement. Dr. Hornaday was never too busy to see and aid enthusiastic youngsters, and the list of young men and women who benefited by his devotion to both youth and animals is a long one.

Dr. Hornaday felt deeply that we must "open wide to youth all gateways to Nature." However thick he might be in the fight to save the American bison, the fur seal, our migratory birds, or other threatened forms of wildlife, William T. Hornaday found time to write letters to children. They might be helpful letters of advice, or letters chiding them for offenses against wildlife. Shortly after his death in 1937 several of these letters were published, revealing again the strength of his convictions about the duty of the naturalist to youth.



The late Dr. William Temple Hornaday

It is in recognition of this devotion that the William T. Hornaday Memorial Foundation has made its objective to "Open Wide to Youth All Gateways to Nature." This it is doing through the promotion and organization of "children's museums" and children's museum programs in areas where the need is the greatest. If William T. Hornaday could stand at the roadway entrance of a rural school in southern Alabama, and hear the joy in the voice of a towheaded lad as he shouts, "The museum is coming," he would know that a gateway was opening for youth.

As its first project the Hornaday Foundation chose Geneva County, Alabama, for a traveling museum with its home base in the public library of Geneva. A Geneva County Children's Museum Association was formed under the presidency of Mrs. Joel Johnson. A curator and field representative was employed by the Foundation, and work was begun to open gate-

Mrs. Joel Johnson, president of the Museum Association of the Geneva County Children's Museum, tells a story with gestures, and with minor competition from the camera.

ways to more than fourteen thousand rural youngsters.

It is a big day in the rural school when the museum car arrives. Eager hands carry motion picture projector, exhibit boxes, and cages containing live exhibits into the school. Shades are drawn and the "museum hour" begins. Perhaps the teacher has asked help on birds and reptiles. So a motion picture showing our common birds of prey is run, while exhibits portray the differences between the hawks. To most rural youngsters a hawk is something to be killed, but they discover that man has allies among these birds. A second movie, entitled "Getting Acquainted with Reptiles", provides new facts about snakes, and is climaxed by a live bull snake—the farmer's friend—being passed about and held by the children.

Its materials packed away, the museum car moves on to its next stop, a weather-worn country church. From it pour scores of Negro children, large and small, to welcome the museum and help unload it. The children have walked with their teachers from two Negro schools, unequipped with electricity. They see a colored motion picture of common birds, watch the redbird feed its young, applaud the spectacular American egret. Children of share croppers, the youngsters had no idea of the value of birds. The whites of their eyes become larger as they hear how many caterpillars a cuckoo eats, and how many ants the nighthawk consumes. They see birds feeding on tomato worms and boll weevils, then handle the mounted birds that are taken from the exhibits and passed around.

When the museum first visited the colored schools the children were timid. Their confidence was soon gained by the curator, and through the marvel of the motion picture, new ideas were given to them. At one school the children had been watching a pair of beavers at a dam. So a beaver program was provided, with a motion picture of beavers at work. Baby beavers in their underwater home were shown in the film, bringing down the house. A mounted beaver was passed around, as were chips showing the efficiency of the animal's teeth. Finally a beaver skull, equipped with four powerful teeth, was shown, some

The travelling museum visits a rural school in Alabama from its base at Geneva. The curator gets a nearly unanimous response to a question on her Nature program about hawks.

of the youngsters having to be coaxed to touch it.

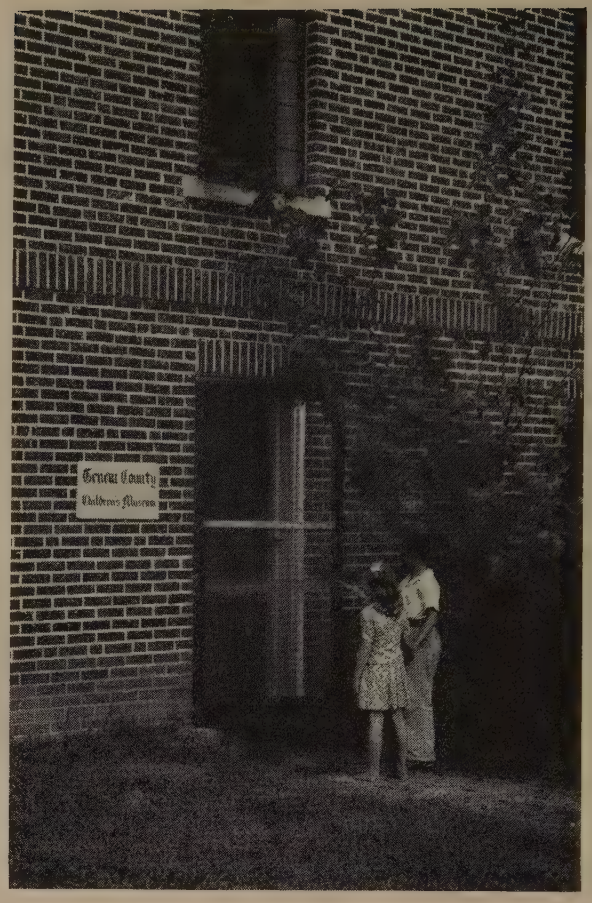
On the curator goes, this time parking by a small-town movie theater. Older boys help to move the material into the lobby, while three hundred school children from schools lacking facilities for the museum "show" file into the theater. Three fields are covered that day—history, social science and Nature study. The curator asks those who have members of their family in the armed services to raise their hands. Most of them do, as war is keenly felt in the rural areas. Love of country is discussed, and some of the reasons why our men are fighting overseas are explained. The technicolor film, "A Man without a Country", is shown.

From this the program moves on to a call for volunteers to act as models. A little girl is quickly dressed in a costume of the Philippines, and a boy bends under the weight of a large basket, such as is carried on the back of a Philippine laborer. Various exhibits from these islands are shown, with a film showing life there as a climax.

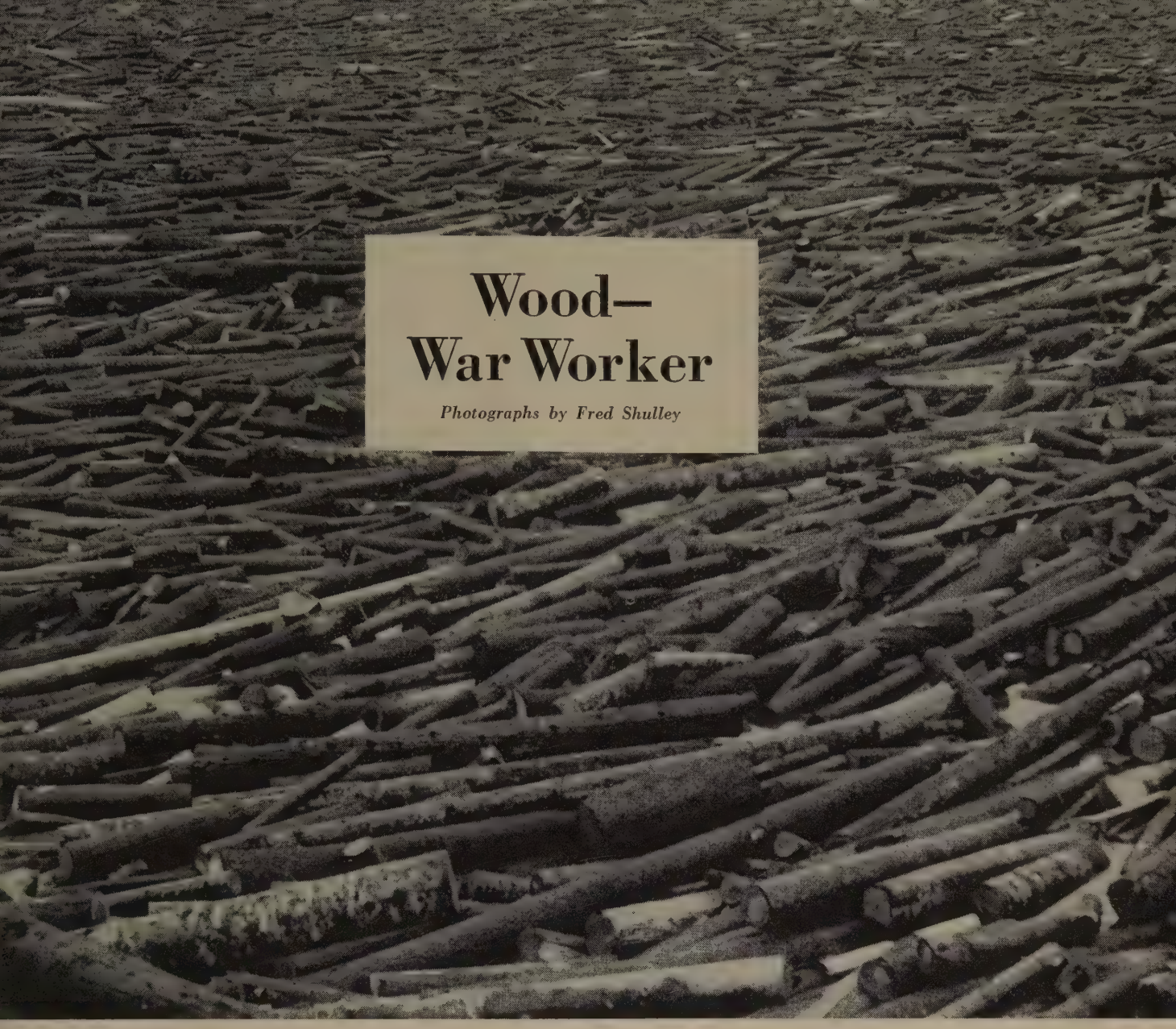
Finally there is a popular talk on the vital importance of conserving our natural resources, accented by the motion picture, "A Heritage We Guard." Conservation exhibits are shown, and a high spot comes in the program with a demonstration of live animals taken from the green-covered, live-museum exhibit cages. A question period closes the session, and many questions have to be left unanswered for lack of time. There is no lack of interest.

All these typical experiences of the traveling museum stem from headquarters in the Emma Knox Kenan Library in Geneva, Alabama. As soon as the museum opened the curator had a Saturday program for rural children who come to town with their parents. Many spend their day there seeing the motion pictures, attending a story hour, playing various museum games that have much information concealed in them. The smallest children may color outline drawings of various gay-colored museum exhibits. One little farm girl may be sprawled on the floor coloring a drawing of a Hopi Indian doll, while,

(Continued on page 388)



Entrance to the Geneva County Children's Museum established in the library. On Saturdays it welcomes many youngsters whose parents have come to town. Below, Sgt. John Ripley Forbes, director of the William T. Hornaday Memorial Foundation, holds a meeting with the Junior Scientists of the Nashville, Tennessee, Children's Museum. He describes the activities carried on in other similar museums while Dr. Harry S. Vaughn, director of the work at Nashville, listens.



Wood—War Worker

Photographs by Fred Shulley

Logs. Saw logs and pulpwood bolts. Wood—vital wood—for a nation at war. Together they lie—35,000,000 feet of saw logs; 35,000 cords of pulpwood—in a floating tangle in the St. John River in Maine. They have come down on the swift white waters of spring; come to war.

Pulpwood, transformed into paper, serves myriad civilian purposes; for war it is strategic. One cord will make 4200 weatherproof containers for shipping blood plasma. One cord will make smokeless powder for 90,000 rounds for a Garand rifle. One cord will make 1484 paper parachutes for army supplies or flares. One cord will make 6120 sheets of weatherproof military maps, or 800 wadded paper vests for high altitude flying. It goes into shell containers and "V" boxes, bomb rings and mine covers, blueprint paper and war chemicals—into a list of war essentials almost without end.

Sixteen million cords of pulpwood from America's farm timberland and forests are sought during 1945. This goal is set to meet the demands of war against the Jap; to keep paper-using industries going under wartime restrictions. Paper is pinch-hitting for strategic metals in many important ways. One cord of pulpwood will make 23,500 one-pound butter containers; 20,000 one-pound lard containers; or 18,000 one-pint milk containers.

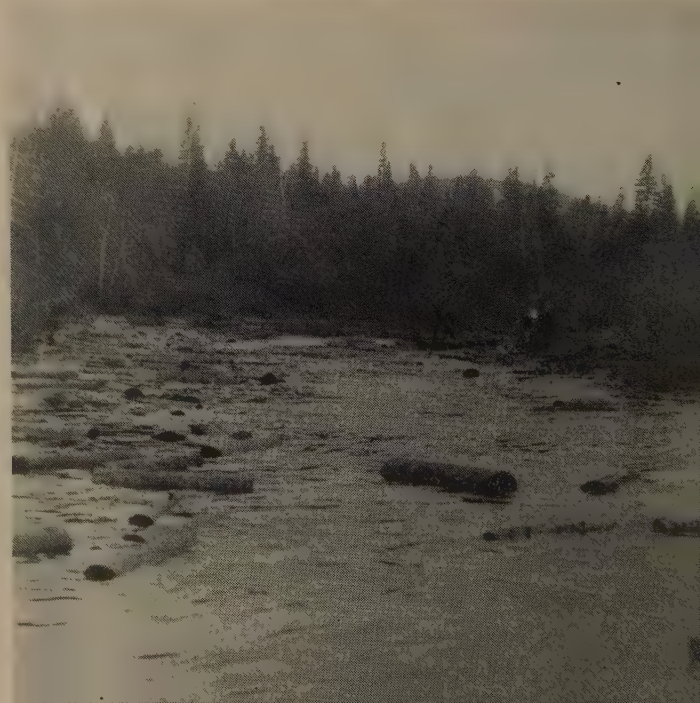
Paper must be salvaged for many purposes. But, also, there must be new pulp from wood itself. And paper is one of its most important offspring.

HELP WANTED!

Paper scarcity and restrictions on its use have made it necessary to count carefully *every* copy of *every* issue of *Nature Magazine*. It is no longer possible to have a surplus to anticipate the wishes of those who may, for one reason or another, wish back issues. Indeed, some readers whose memberships have not been promptly paid, or whose subscriptions were not quickly renewed, have missed one or more issues. It is no longer possible to carry people on the list until they get around to sending in a check. And when they do renew it is often too late for them to keep a complete file. Unfortunately this has happened in the case of some schools and libraries that keep and bind *Nature Magazine*.

If, then, you do not preserve the magazine, and would like to help a school or library fill in the gaps, send us the copies for which you have no further need. *Issues from October, 1944, through May, 1945, are the ones needed.*

Part of thirty-five thousand cords of pulpwood cut during the winter months at two camps in northern Maine. It was stacked on and near the Wallagrass. When the spring thaws come nimble and alert woodsmen start the bolts on their way down stream to the Millinocket mills of the Great Northern Paper Company. It is a risky business, for if under bolts slip into the water the whole tier may collapse, taking the sure-footed lumbermen with it unless they are able to scamper to safety. Once the channel is clear, bolts are thrown in from the piles on the stream bank, then woodsmen follow them down, pushing back into the current pieces that have snagged on the shore. Below, a "pulpwood driver" walks the pulpwood bolts to loosen a jam and send them into the drive down stream. He needs balance and skill born of long experience to do this task. The bolts, in the picture on the right, are loose on the Wallagrass and headed for the mill. Men may be seen at the right following the drive and pushing stray bolts back into the current, or throwing in bolts from piles that were accumulated during the winter along the bank.



High water, swift water and white water on the St. John River, Maine, conceals the logs and pulpwood bolts that are racing through the rapids on the drive to the mills. Below, twelve thousand cords of pulpwood stored on Wallagrass First Lake. As the pulpwood is needed it will be brought from this great boom over to a loader—the structure in the foreground—where it goes up a conveyer and out on a wooden trestle. There it can be loaded on four trucks at a time to be trucked to the railroad station and then to Millinocket and the pulp mills. Many such drives as are shown in these pages are held when the thaws come to northern rivers. Thanks to the winter's work of the woodsmen with their saws and axes, and the work of the rivermen, the vital pulpwood is gotten out and to the mills. This work is being done in the face of manpower shortages, and the men who are doing it are performing an important war service, for the paper into which this wood is made is vitally necessary to winning the war.

The Mt. Lyell Salamander— An Unsolved Mystery

By GRACE V. SHARRITT

HAD it not been for a certain mousetrap, the Mt. Lyell Salamander, which inhabits Half Dome, a granite peak in Yosemite National Park, California, might still have been an undiscovered amphibian. As it is, the small animal with its webbed toes and chocolate-brown coat is enough of an unsolved mystery to pique students of natural history to further research.

Little is actually known of this salamander, *Hydromantes platycephalus*, other than that it has been isolated from its nearest relatives in France and Italy to the Sierra Nevada region of North America. How it arrived in our West, and why has it been isolated to this particular mountain range are among the questions that have puzzled scientists ever since the summer of 1916. Then Charles L. Camp, of the University of California, while on a scientific expedition into Yosemite, set a mousetrap to catch a mountain lemming. Instead he caught a pair of salamanders.

The trap had been placed at the entrance of a small hole in moist soil in which heather grew. The location was at about ten thousand feet elevation and near Donahue Pass Trail, about one mile below Lyell Glacier. However, since that July morning not a great deal has been added to scientific data on the life history of this curious salamander.

Half Dome itself is a curious phenomenon. The mountain top has been called an island among the clouds, separated by barren cliffs from the rest of the world. It is snow-covered from six to seven months each year. Its skyland of thirteen acres is subjected to great extremes in temperature. The soil is thin. At an elevation of about 8856 feet this magnificent lonely mountain peak is bounded by sheer abyss and mystery.

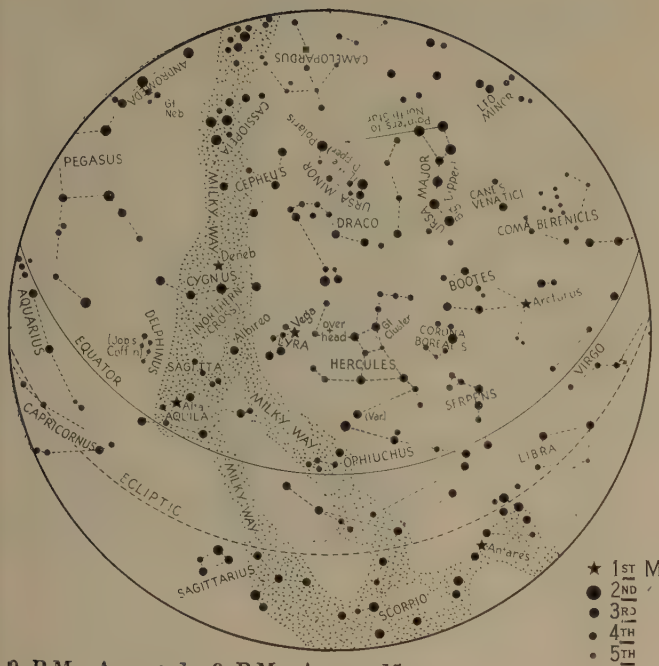
The golden-mantled ground squirrel plays among the hawkweed and yarrow during the brief summers. Few birds, if any, are said to nest there. Huge boulders are the only shelter from storms and sun on this rock island high above the valley floor. Yet it is in these rugged surroundings that the Mt. Lyell salamander seems to thrive. While specimens of this species have been found throughout the Sierra region, in heather and among rocks close to mountain streams seeping beneath snow banks, probably more have been found on Yosemite's Half Dome than in any spot of the Sierra Nevada.

The Mt. Lyell salamander is the smallest of the three species found in Yosemite, and measures about five inches from head to tail. Its tail is shorter than its body, which is marked with many gray lines, and its head is broad and flat and wider than the body at any point. It has no lungs. It is thought that the female bears her young alive.

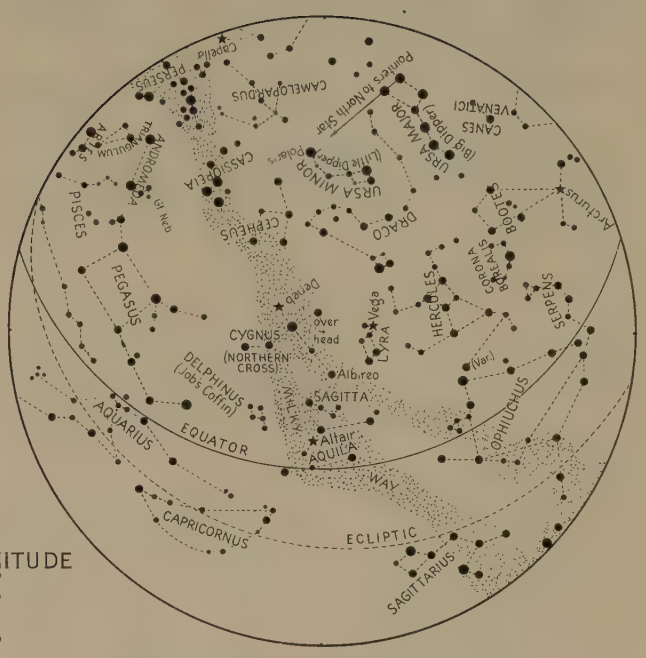
Although its toes are webbed, it does not live near ponds of water. Rather, its body is kept moist by cold snow-waters seeping into the soil. Most of the specimens have been found above an elevation of seven thousand feet or more, Catherine Hemphill and Orlie Anderson collecting thirteen at 10,700 feet. The large fence lizard is the only reptile found, so far, that inhabits the same area.

Other species of this family found in eastern North America are known to be nocturnal in habits and to spend part of the tadpole stage in water. But whether or not the little solitary fellow who darts among the Sierra heather high above Yosemite's alpine meadows has the same characteristics is unknown.

In fact, so little is known of this species, partly because of its inaccessibility, that there are many speculations on his mysterious life story. Unanswered questions are a spur to the imagination of natural history students. Many facts remain to be discovered about this amphibian, which apparently prefers the solitude of its castle on Half Dome and similar situations in the Sierra Nevada to any other places in North America. Naturalists will one day learn them.



9 P.M., August 1; 8 P.M., August 15.



9 P.M., Sept. 1; 8 P.M., Sept. 15; 7 P.M., Sept. 30.

To use these maps hold them before you in a vertical position and turn until the direction of the compass that you wish to face is at the bottom Then, below the center of the map, which is the point overhead, will be seen the constellation visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south. Time given is Standard Time; add one hour for War Time.

The Evening Sky in August and September

By ISABEL M. LEWIS

THIS is the time of year when one is surprised on many a clear, dark night by the sudden appearance of meteors darting swiftly in greater than usual numbers. Finest of the periodic swarms of meteors, the Perseids are due to return and give their maximum display on the nights of August 15 and 16. Since the individual members of this swarm are widely scattered along their orbit, they may appear on any night over a period of several weeks. They will be seen in greater numbers after midnight than before, because the constellation Perseus, from the direction of which they come and which gives them their name, does not rise until near midnight in the northeastern sky.

It is at this time of year, also, that the Milky Way is particularly brilliant and conspicuous in the evening sky. It passes diagonally across the heavens from the constellation of Cassiopeia, in the northeast, to the southwestern horizon. Overhead, in Cygnus, it divides sharply into two distinct branches. One of these passes through Serpens and Ophiuchus to Scorpio, the other through Aquila and Sagittarius to the southwestern horizon. They join again in Centaurus, and the region of the Southern Cross in the southern hemisphere.

Early August of this year, late in the evening, will be an excellent time to look both for meteors and the Milky Way, for a new moon will come on August 7, and first quarter on August 15, so there will be no bright moonlight to contend with at that time. One cannot expect to see the Milky Way either in bright moonlight or near city lights. A dark night in the country, or at sea, furnishes the best conditions under which to observe the awe-inspiring spectacle of sun crowded upon sun in dense star clouds as one gazes along the plane of our great Galaxy.

Again, at this time of year appears the familiar march of well-known constellations through the zenith in the mid-latitudes of the northern hemisphere. To the west of the meridian, now, and leading this procession is Bootes, with its brilliant orange-colored Arcturus; then, in order, from west to east, come the small and exquisite little circlet of stars known as the Northern Crown, or Corona Borealis; the huge constellation of Hercules; the small Lyra, or the Lyre, with its magnificent Vega, and, finaliy, Cygnus, the Swan, close to the zenith in this latitude in early September. Its brightest stars form the familiar Northern Cross, with its first magnitude star Arided or Deneb Cygni, at the top of the Cross, and Albireo, a beautiful yellow and blue double star, at the foot.

(Continued on page 385)

The School Page

Edited by E. LAURENCE PALMER

Professor of Rural Education, Cornell University, and Director of Nature Education, The American Nature Association

ALL OUT AND ALL IN

THIS is the time of year when baseball interest accelerates. We are beginning to wonder who will emerge the winners, but, in spite of what some baseball fans would contend, the most important outs and innings are not those recorded on the score boards of Pittsburgh, Brooklyn, St. Louis or elsewhere.

The really big struggles for victory are those that center around world affairs. For years we have talked of "all out" warfare. Most of us have tried to contribute to a relatively speedy victory for "our team," and, to no small degree, we have succeeded, although the sacrifices have been great for many. Events move too fast for us to hope to deal with specific matters in world affairs when writing a page that will not appear in print for some weeks. Whatever the developments may be, it is obvious that, following this "all out" effort, most of us are going to be "all in", either as individuals, as individual nations, or groups of nations. It is not inappropriate then, in a school page dealing with the teaching of Nature, to point to some of the corollaries that seem to exist between what happens when living animals, other than man, give all to attain what seems all important, and what happens in the world of man's affairs when he "gives out" with all he has.

Preparing for the Future

This article will appear in print at the time of year when a vast majority of living things will have given their all for the production and protection of the generation for which they are responsible. Most wild mammals will have seen the young of the year through the critical early months of their lives. Many birds will have made their nests, reared their young to relative independence, and are now resting on their labors, molting their feathers and generally getting ready for a southern journey, which must be undertaken before the crisis of winter is upon them. Not a few mammals, having raised the family of the year, will now set about getting themselves into condition to meet the crises that lie ahead. Squirrels and other rodents will be storing food for times that are not so easy. Bears and some other mammals will be putting fat on their bones so that when hard times come they can maintain some degree of independence. Bees will be busily engaged making an accumulation of wealth that will make them the envy of many other living things, some of which have been neither frugal nor diligent during good times.

In other words, right now, whether in the world of Nature or of human affairs, are times when it seems only reasonable that a little effort be put in getting one's house in order rather than in misguided improvidence. Certainly it paid for the robin last summer to work from early in the day to late at night feeding the open mouths in the mud-lined nest. But now the time has come for those youngsters to stand on their own wobbly legs, to fly a bit on their own immature wings, and to seek their own food through their own efforts. Even the young cowbirds, which so shamelessly parasitized the little yellow warbler or chipping sparrow in early summer, have by now taken some of the obligations of life and are getting their own food. There comes a time when every organism, or group of organisms, must work out its own problems, and there comes a time when those who have long been dependent on others must be forced to assume some of their own responsibilities. It is only rational that this adjustment period should come at a time when an all-out effort has resulted in an all-in condition of affairs.

Renewing Energies

For school folk, at least, August has long been more or less a period of recuperation. Even those who are summer-school minded are inclined to take off a few weeks or days to renew their energies for the year to come. It is entirely logical that with any activity involving a renewable resource, whether it is wildlife, forests or human energies, there should be periods of recuperation following periods of excessive effort. This is not a purely selfish philosophy. It is merely common sense that sustained yield, or sustained prosperity, or sustained existence is predicated on the existence of an opportunity for recuperation. What would our migratory birds be able to do if, immediately after raising their family or using their energies by replacing molted feathers, they were called upon to undertake a sustained forced migration? How many woodchucks and bears would survive a winter if, immediately after having reared and protected the young of the year, they were called upon to go into hibernation without the opportunity for renewing their body resources? How can nations that have met emergency situations valiantly be in a position to help themselves and others in the future if they continue indefinitely to subtract from, instead of add to, the wealth that may guarantee their independence?

It does not seem reasonable that man alone should be exempt from the laws that prevail in the economy of other living things. Even the plants have life or annual cycles, or daily cycles, in which food and other assets are accumulated. Without these accumulations, periods of low prosperity could not be survived successfully. We who teach in the biological sciences recognize these laws. We know that if we wish to establish a wild flower garden, or to transplant many of our garden flowers, we should not subject the plants to the additional strain of readjustment by digging them up and transplanting them immediately after they have given their all for the production of flowers or fruits. Instead, we wait until the year's accumulation of wealth has been laid aside in the plant. Then we can make the necessary changes and have some assurance that our plants will not die.

Rest Is Good Judgment

Admitting that periods of recuperation are necessary is not a sign of weakness. Rather, it is a sign of good judgment. It is an indication of planning for a long-time pull rather than living for the moment. It is a sign of intelligence. We have learned the secrets of wheat and pigs, of honey bees and brook trout, and, for the most part, we have adjusted our use of these creatures to the recognized needs they have. One sometimes wonders if we have been as reasonably intelligent in the management of our own resources. To be sure, when there is a real emergency there is need that everyone give unstintingly of whatever he has to help the cause or help win the game. But, if we wish to live to run another day, we must maintain our own health, our own wealth and our own independence. We can maintain none of these things if we fail to recognize the therapeutic value of the plus sign, and the merit of now and then using black ink to make entries in our ledgers, instead of draining the red ink pot dry. Surely, we want to help less fortunate peoples of the world, but how can we do this without maintaining our local prosperity? We should be as vigorous in building a reserve of usable wealth as we have been in establishing a record-smashing and exhausting indebtedness. Any other procedure can be little else than economic suicide, and if we as individuals, or as a nation, seek to hold the respect of the world we can do it only by proving that we can ourselves succeed in avoiding dependence on others. The crowd cheers the winning team. The prize cattle and plants at the county fairs are those which, through their own success,

HOW TO BRING HOME PERFECT FISH and GAME

Cool your fish and game when you leave camp and arrive home with it in perfect shape. Also take frozen foods to camp or cottage and eat like a king. Jewett Arctic Hamper has heavy duck jacket, cork filled. 5 inches insulation top and bottom. Fits between front and back seat of car. No hard edges to tear upholstery. Weight 28 lb. Galvanized interior. Holds 40 lbs. meat. Built to take abuse.

20"x13" x22"

10 day Money Back Guarantee

$19.95

Mail order now to Dept. J-1098

JEWETT ASSOCIATES

2 Letchworth Street Buffalo 13, N. Y.

ARCTIC HAMPER

Food FACTS

Civilian supplies of canned vegetables are only 70% of last year's.

Home grown food saves man-power, railroad freight and distribution.

Every pound of food you grow is a contribution to victory; every hour you work in the garden is an hour of war work.

In return, the garden offers you healthy exercise, crisp, fresh vegetables of excellent quality and high vitamin content.

For your country and your home

GROW A VICTORY GARDEN

To get the best results from it

Sow Asgrow Seeds

Sold through local stores from bulk or in the colorful RICE'S packets.

ASSOCIATED SEED GROWERS INC.

Atlanta 2 - Indianapolis 4 - Los Angeles 21
Memphis 2 - Milford, Conn.
Oakland 7 - San Antonio 6

Packet seed division:

JEROME B. RICE SEED CO.

Cambridge, N.Y.

bring happiness and prosperity to others. The pauper can help no one, not even himself. The bankrupt makes no one prosperous. The corn that fails to mature its fruits before a killing frost can do nothing to help pay off the mortgage.

It is a joy giving your all for a cause. It helps build self-respect to make sacrifices for things in which we believe, and if we had not been willing to make our living in recent years more stringent than may have been our custom we never could have won the battles we have won. But, having gone all out in our efforts to win and being more or less all in as a result of this effort, we should at least be making plans for living under a more positive economic philosophy by following a course that recognizes that it is not sinful to accumulate resources. The laws of biological economy that apply to most living things do not differ radically from those that man must follow. We hope that you had a happy vacation and come back to your work ready to do much better than would be the case had you not recognized that a little rest now and then greatly increases your usefulness to yourself and to others.

Magazine of Verse

Florida Magazine of Verse is edited and published by Charles Hyde Pratt at Winter Park, Florida, and has apparently been appearing quarterly for the past five years. Volume Five, Number Four, is, however, the first copy we have seen, and apparently it is our loss, for Mr. Pratt has selected some fine poetry for the pages of this May, 1945, issue. In sending us this copy Mr. Pratt calls our attention to a poem by suggesting that we "see page 26". There we find a verse by Landor Cotton with the title "Nature's Medley", and, having read it, we dutifully reproduce it. Writes Mr. Cotton:

A curio plus is the Platypus
With his nose in the tip of his bill.
From an egg he is hatched,
With fur he is thatched
And he swims under water with skill.

Lacking visible ears, keenly he hears.
His food, without teeth he can chew it.
His spur like a chicken's
Can hurt like the dickens
When he squirts his venom through it.

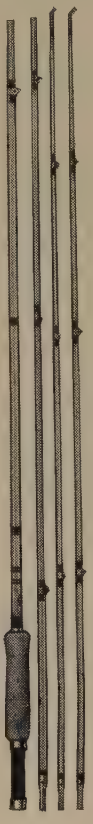
Just why his tail is flat like a flail
I still am unable to say.
But the webs in his paws
Are there because
He was formed in a far-off day.

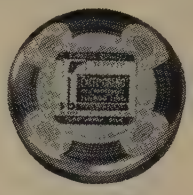
Wants to Correspond

J. Kenneth Goody would like to correspond with others genuinely interested in geology, microscopy, herpetology and entomology. His address is c/o A. Goody and Co., Ltd., Medlock Street, Hulme, Manchester, Lancashire, England.

The Fly Rod Tackle We Plan To Make *First!*

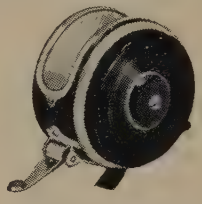
There will again be South Bend tackle for *all* types of fishing, but here's the tackle to make the fly rod angler cheer! Mind you, we're not *yet* in production and can't quote prices, but we *can* tell you about our plans!





EXCEL-ORENO Superb Silk Line

The fact that many, many Excel-Oreno lines are in use today, after years of service, is proof enough that quality is *always* worth a little extra.

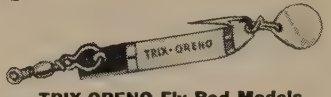


OREN-O-MATIC "The Balanced Reel"

The most popular automatic ever made—the war years saw it become a prized "collector's item." No. 1130 and No. 1140, in beautiful anodized aluminum, will be available first.

South Bend Split Bamboo Fly Rods

In your *new* South Bend rod you'll get the precision craftsmanship of a *custom rod at production prices*—a rod of genuine Tonkin cane with *four extra years* of seasoning in our vaults.



TRIX-ORENO Fly Rod Models

These two popular fly rod sizes, No. 593 and No. 594, in favorite patterns, will be made FIRST! Tell your dealer how *many* you want.

Get This Book FREE!

This beautifully printed 48-page book shows all 36 prize winners in our 1944 Fishing Photo Contest and full-color pages of your favorite "Quality Tackle." Send for it, enjoy the fine photography and start *your* peacetime planning. It's Free!

SOUTH BEND BAIT COMPANY
861 High St., South Bend 23, Ind.

Buy and Keep More War Bonds

SOUTH BEND

A Name Famous in Fishing

TAMARACK ADVENTURE

(Continued from page 350)

feet to the summit of Fairview. This was entirely through snow. From the summit, while much the same as from the saddle, the view is yet grander and more far-sweeping. On my way down I had to stop again for a last lingering pause among the larches.

Such was the mountain adventure when I had my first meeting with *Larix lyalli*. However, had I but known it, this larch was to be found much closer home. Living in Seattle, I had only to cross the Cascades to the eastern slopes of the northern section of this range. There in the Wenatchee National Forest it is reported at a number of stations. It is also reported at a few stations in Glacier National Park.

All three of our native American larches, as well as those in other parts of the world, although cone-bearing, are deciduous. In this respect they are akin to the bald cypress, *Taxodium distichum*, of our southern states. Leaves of alpine larch are from one to one and one-half inches long, light bluish-green, turning light yellowish in fall. They grow in short tufts or clumps of from thirty to forty needles. The cone is from one to one and one-half inches long. It matures at the end of each season and, like the cones of our other larches, falls entire. A distinguishing feature of the leaves is the four-angled structure. Another distinguishing feature is the whitish, woolly hair on cone scales and branchlets.

One authority reports that the "wood is orange-brown or reddish-brown, fine-grained, hard, heavy and tough; little used owing to its scarcity and high mountain range."

Throughout its range it is generally reported at elevations of from 5000 to 7500 feet, although I found it at 8000. The average height is from thirty to forty feet. Smaller trees are found, while larger ones up to fifty and sixty feet are reported. Estimated average age is from 200 to 300 years, and some are believed to be 600 and 700 years old.

Whether alpine larch, like other timberline species, ever becomes bent and twisted by winds, or matted and prostrate by heavy snows, I do not know—apparently not. As far as I can find it always maintains an upright position. Perhaps natural scientists will have an explanation of this.

I have spoken of finding alpine larch as an adventure. The same is true, I must admit, of the quest for any other tree, or any plant or animal or bird or insect, or any of the other fascinating things of Nature. No matter where these quests lead, they always open new doors. I have had some of my most rewarding Nature rambles in city parks, on the grounds of estates and public buildings, and even on downtown streets.

Any Nature discovery, then, regardless of where made, is always an adventure. We can be glad for them all, and especially for those that like alpine land, take us up high where little-known wilderness people dwell.

THE MOANING BIRDS

(Continued from page 352)

open ocean. They rarely fly more than two or there feet above the surface, but utilize every updraft of wind created on the sloping side of the rollers, and, like albatrosses, will ride the crests on rigid wings. They follow schools of small fish for days on end, and sometimes hundreds of the birds will be seen in all manner of postures. Some will be flying swiftly in an effort to outflank the fish below. Others will come bobbing to the surface, where they will swallow freshly-caught prey before submerging to pursue more of the same. During the season when they appear on the islands to raise their youngsters, they will occasionally cough up a small flying squid if disturbed. These squid, which average about three inches in length, outwit their deepwater enemies, which attack from below, by jumping from the water like flying fish. They have little control, and hurtle along in a straight line until their flying speed diminishes and they fall back into the ocean. It is thought by many people that the shearwaters pick these animals out of the air while in full flight. During the nesting season the squids form the main item of the moaning birds' diet.

Botanical Garden Plans

Moving into its second half-century of service, the New York Botanical Garden has drafted plans involving a minimum expenditure of $6,580,000 to make the Garden the outstanding beauty spot of its kind in the world. A Fiftieth Anniversary Fund of $4,900,000 is sought, with $1,680,000 included in the City of New York's proposed Postwar Capital Budget. Three laboratories would carry on research in plant diseases, and expanded horticultural investigation and education would be provided, and scholarships established, to encourage potential young leaders in the plant sciences.

Shell Fish Movie

"Shell Fishing" is the title of a one-reel, 16 mm. black and white sound film added to the motion picture library of the U. S. Fish and Wildlife Service, Merchandise Mart, Chicago 54, Illinois. It shows the methods of fishing for clams, crabs, oysters, and lobsters, as well as preparing these shell fish and crustaceans for market. The film is available to any responsible group, firm or individual for showing.

THE OLD WOOD PILE

(Continued from page 357)

enormous height, then saw it dwindle away. There came a time when the last chip was carried into the house in the old hickory basket, and the last stick of wood was burned in the big old base burner in the big old white house, and the owner of the old home, too, made his last track in the sawdust. A rich man came from the East to buy the precious acres. He sold all the giant trees to a furniture company. Men were put to work to cut off the valuable trees of the forested land. When they left, more men came with dynamite, and for weeks loud reports told of the awful devastation among wild gooseberry bushes and bittersweet, wild flowers and hazel brush, herbs and berries, the supple mink and the friendly chipmunk, the pheasants and all the wood folk. All the chattering squirrels moved onward, or were shot to death. This was all done to make a vast cornfield, and then there was no more use for the old wood pile. Yes, it was nice to have been born in the seventies.

Illinois Flora

Flora of Illinois. By George Neville Jones. Notre Dame, Indiana. 1945. American Midland Naturalist. 318 pages. $4.00.

This volume, prepared by the Assistant Professor of Botany at the University of Illinois, is a synopsis of the flora of Illinois based upon field and herbarium studies over a five-year period. No comprehensive account of the botany of the State has hitherto been published, and the author presents a concise account of the vascular plants of Illinois. The key provided is designed for the use of persons with an adequate background of knowledge in botanical identification from the systematic viewpoint. It would not be useful to the beginner or the relative tyro.

Nuts

Crack and Crunch. By Lee Maril. New York. 1945. Coward-McCann. 64 pages. Illustrated by the Author. $1.75.

With the publication of this book, which bears the subtitle "Nuts in Fact and Fancy", the author completes a trilogy. The two preceding books, both reviewed here, were *Spice and Scent* and *Savor and Flavor*, dealing respectively with herbs and berries, both in fact and in fancy. This latest book follows the plan of the others, giving, first, botanical information about the nut, then supplementing this with legend and lore relating to it. The result is that these are both informative and entertaining books, attractive and useful additions to one's Nature or botanical library. R. W. W.

AT CRESTMONT INN

Fun 'n Fine Living for the Family

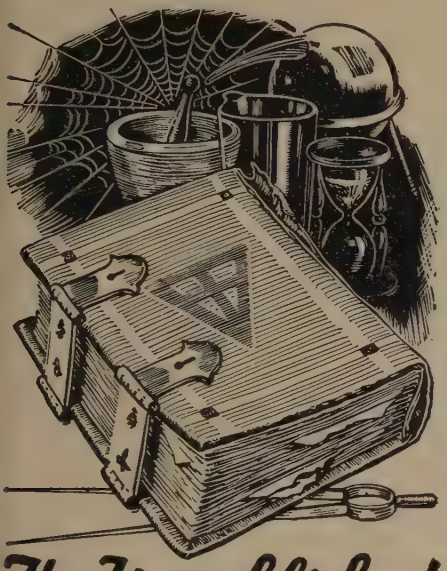
Whether you seek lazy days in the sun . . . or a busy-every-minute vacation—come to Crestmont Inn. Cooling mountain breezes. No mosquitoes.

• Water sports • Golf • Tennis • Riding • Cycling • Hiking • Music • Dancing • Game Room • Bridge • Kindergartner.

Superb cuisine. Distinguished patronage. 2200 feet altitude. Easy to reach. Reserve early. *Booklet.*

THE CRESTMONT INN
Wm. Woods, Prop.
EAGLES MERE, PA.

SECRETS ENTRUSTED TO A FEW



The Unpublished Facts of Life

THERE are some things that can not be generally told—*things you ought to know.* Great truths are dangerous to some—but factors for *personal power* and *accomplishment* in the hands of those who understand them. Behind the tales of the miracles and mysteries of the ancients, lie centuries of their secret probing into nature's laws—their amazing discoveries of *the hidden processes of man's mind,* and *the mastery of life's problems.* Once shrouded in mystery to avoid their destruction by mass fear and ignorance, these facts remain a useful heritage for the thousands of men and women who privately use them in their homes today.

THIS FREE BOOK

The Rosicrucians (not a religious organization), an age-old brotherhood of learning, have preserved this secret wisdom in their archives for centuries. *They now invite you to share the practical helpfulness of their teachings.* Write today for a free copy of the book, "The Mastery of Life." Within its pages may lie a new life of opportunity for you. Address Scribe P.A.C.

The ROSICRUCIANS
(AMORC)
San Jose California, U.S.A.

THE EVENING SKY IN AUGUST AND SEPTEMBER

(Continued from page 381)

In the southern sky, now Sagittarius is near the meridian, and Scorpio is in the southwest. Andromeda and Pegasus, fall constellations, are coming into view above the eastern horizon.

Among the planets this month we will find Mercury in inferior conjunction with the sun on August 20, when it moves to the morning sky. It will be best seen in the morning sky around September 6, the date on which it reaches greatest western elongation. It is then a bright object in the twilight just before sunrise, resembling the star Vega. Venus is in the eastern morning sky, passing from Gemini through Cancer into Leo. On September 23 it is less than half a degree north of Regulus in Leo. As always it is the most brilliant object in view.

Mars now rises before midnight and is high in the southeast at sunrise. It passes north of the Hyades in Taurus, and into Gemini. It has a close conjunction with Uranus, which is no brighter than a faint star of fifth magnitude, on August 17.

Jupiter is now approaching the sun in the western evening sky in Virgo, and is too close to the sun to be seen late in September. Saturn rises about three hours before the sun in August and shortly before midnight in September, when it will be high in the southeastern sky at sunrise. It remains in the constellation of Gemini during both months.

On September 23, at 5:50 A.M., Eastern War Time, the sun crosses the equator going south. Autumn then commences in the northern hemisphere and spring in the southern hemisphere.

Sketching Birds

Bird Portraiture. By C. F. Tunnicliffe. New York. 1945. The Studio. 96 pages. Illustrated in color and monochrome. $3.50.

This book is the thirty-fifth in the "How To Do It" series published by The Studio Publications, a series dealing with the arts. It gives the artist suggestions and guides to ornithological sketching and painting, hints on field studies, drawing from life, plumage, poses and action studies, and other details. The text is entertainingly done, drawing on the artist-author's own work in studio and afield. The illustrations in the book are a particular delight, and their interest and value are not confined to the bird artist alone. Mr. Tunnicliffe is a British artist, and the birds pictured are British birds, a fact that may to some slight degree affect the practical value of the book in America. However, the information given is applicable to all birds. Whatever may be an artist's evaluation of the book, it is, from the general point of view, both attractive and interesting. R. W. W.

Rustic fencing of enduring beauty and lasting utility, for enclosing residence grounds, gardens, country homes, farms, parks or club property. Made of Michigan white cedar, with bark removed. Natural finish. Easy to erect. Many attractive designs.

• *Send Stamp for Literature* •

MICHIGAN ROADSIDE TABLE CO.
PONTIAC 15, MICHIGAN
Dept. N.

Burpee's Seeds Grow

Send postcard or letter today for Burpee's 1945 Seed Catalog Free.

W. ATLEE BURPEECO.
498 Burpee Building, Philadelphia 32, Pa.
(*or*) 498 Burpee Building, Clinton, Iowa

FREE

1000 Rooms—1000 Baths
$2.50 to $5.00 single

$4.00 to $7.00 Double
5 minutes to Times Square
A Few Minutes from Anywhere
Write for Maps and Booklet

Prince George Hotel
14 East 28th St.
New York 16, N.Y.
Charles F. Rogers, Jr. ~ *Manager*

STOP!
Get the BLACK LEAF 40 •

Aphis (plant lice), leafhoppers, leaf miners, mealy bugs, lace bugs, most thrips, young sucking bugs and similar insects can be controlled.

SPRAY with BLACK LEAF 40

An ounce makes 6 gallons of spray effective on aphis. Full directions with package—A quick, sure, economical control for these insect pests.

Just a little spread on roosts kills poultry lice and feather mites.

See Your Dealer
TOBACCO BY-PRODUCTS & CHEMICAL CORP., INCORPORATED, Louisville 2, Ky.

LOOK FOR THE LEAF ON THE PACKAGE

FOREST FIRE WEATHER

(Continued from page 360)

diary is responsible for about 9.1 per cent of all forest fires. Lightning is an especially important fire factor in the West, where dry summer thunderstorms are common. This is not so often the case in the East, where heavy rains usually accompany Nature's pyrotechnics. But out West the rainless storms roll out across the dry forests and the bolts lash down to set the leaves and brush aflame.

The weatherman can predict when these thunderstorms are apt to come, and can call ahead from one station to another, telling when the storms are actually on the way. But no weatherman can say where the lightning bolts will strike—it is the job of the forester and the lookout man to locate the fires once they are started.

This is no easy job for the lightning does its work well and rarely is content with starting just one fire. A single thunderstorm has been known to start more than three hundred fires, and a case was once reported from Idaho in which more than seventy fires were started within a storm period of twenty minutes. It is an accepted fact that lightning will cause anywhere from two to eighteen fires per 100,000 acres every year in the northern Rocky Mountain region.

Speed with which the flames will spread once a fire has been started depends largely on the dryness of the forest floor. For this reason, both the weatherman and the forester take a great interest in the amount of moisture in the "duff", or mat of fallen leaves, twigs and other dead vegetation in the forest. This duff is present in virtually all stands of green timber, and through it the fire eats its way. It is largely because of the presence of duff that trenching is necessary in fire control.

Everybody knows that a wet forest will not burn, and naturally rain and snow are among the best safeguards against fire. Even a long dry spell, unless it be in spring, is not always a serious hazard. Humidity—the amount of moisture in the air, also enters into the picture, and in order to measure this the modern forester includes a psychrometer among his weather equipment.

When the air suddenly turns dry after a rain, the forest materials lose moisture rapidly and soon are in a state suitable for ignition. But if the air remains moist, even though no rain falls for a long period, the forest material retains its moisture and the fire danger remains slight.

An instrument known as the "duff hygrometer" has been devised so foresters can measure the moisture content of forest material. The apparatus consists of a gauge and a section of rattan. When the rattan is thrust into the duff, it expands and the gauge registers its change in length. In this way the forester can tell just how much moisture the duff contains. Experience has shown that a moisture content of more than twenty-five per cent means no fire danger at all, while from nineteen to twenty-five per cent indicated very little danger. Camp fires become danger sources at moisture contents of from fourteen to eighteen per cent, as do matches from eleven to thirteen. Fire danger jumps from medium to high when the moisture percentage drops to between eight and ten, while all sources of ignition are considered extremely dangerous when the moisture content registers less than seven per cent.

Once the fire starts, busy times are ahead for the fire bosses and their crews. Men and equipment must be rushed to the scene as rapidly as possible. Greatest speed in recent years has come by means of the "smoke jumpers," fire fighters who use airplanes and parachutes to reach the scene of the fire in a hurry. Planes also are used to drop equipment and supplies to crews in action, often saving hours of precious time in this way.

The weatherman's job is by no means finished when he predicts potential fire weather and advises that preventive steps be taken and fire fighting preparations made. The fire boss needs the weatherman's services just as much as the ranger and the forester did.

Rainfall and snow are the only actual weather elements that can put out a fire, but there are other elements—chiefly wind and humidity—that can either aid or hinder the fire fighting activities. On-the-spot knowledge of all these factors can be vitally important to the man in charge.

For this reason, the Weather Bureau operates a fire-weather mobile unit. Fitted with a radio, and with charting, weather observing and camping equipment, these trucks are traveling weather stations. Each truck has a two-man crew, the fire-weather official and an assistant qualified in radio.

When the fire fighting crews move in, the weather truck travels with them. The fire-weatherman draws his charts on the basis of reports received by radio and makes his forecasts in the field as easily as he did from the regular weather office. His on-the-scene study of wind behavior is important, and, because of it, fire lines can be dug at the proper points and backfires touched off at the time when they can best take advantage of weather conditions. But weathermen and fire fighters alike are helpless when a high wind whips the blaze aloft, causing it to "crown" and go raging through the treetops beyond all reach of control.

Americans have come to appreciate the value of their forests and to realize how thoroughly destructive a forest fire can be. This realization has come tardily, but come it has, and our remaining forests are being guarded carefully. The fire-weatherman and the forest ranger are working shoulder to shoulder to see that America can hand on to future generations a heritage of majestic trees and pleasant woodlands to use and enjoy in the years to come.

YOUR NATIONAL MONUMENTS

(Continued from page 373)

communal dwellings on the uplands and canyon floors; cave rooms carved in the volcanic tuff walls of the canyons; and masonry rooms built against the canyon walls, often in combination with the caves. Still different is the 4-story watch tower of Casa Grande, in southern Arizona. Here, for many generations, until their disappearance some 500 years ago, outlooks for the Hohokam, the "ancient ones," watched for their enemies while their brethren tilled the soil and operated extensive irrigation systems. Only recently has the white man resumed irrigation in this region.

Outside of the public lands states of the West, the only prehistoric area in the system is the distinguished group of mounds at Ocmulgee, near Macon, Georgia, purchased with funds donated by citizens of Macon and elsewhere in Georgia, presented to the Federal Government and made a monument by Congress. Although it is important because it was the site of several successive Indian cultures, there are literally thousands of other sites throughout the South, the East and the Middle West, many of which should be given protection. Some of the best of them are preserved in state ownership, to the everlasting credit of the states.

Those features of the monument system which are of scientific interest—although they are usually just as fascinating to the layman—are of almost bewildering variety. Some, such as the 865-foot fluted basaltic shaft of Devils Tower, in Wyoming, our oldest national monument, or the cinder cone of Capulin Mountain in New Mexico, require relatively small acreage for the main exhibit and for an adequate buffer against undesirable encroachments. On the other hand, some kinds of notable geological phenomena have a way of occupying a good deal of space and cannot be satisfactorily appreciated if exhibited on a puny scale. Glacier Bay is a case in point; so is Katmai, also in Alaska, and containing the vast Valley of Ten Thousand Smokes. The first Grand Canyon National Monument, which became Grand Canyon National Park, contained 800,000 acres. Desert geology and desert vegetation, the very desert itself, are often characterized by magnificent distances; intrusions upon it are often visible for miles, and once it is scarred, the healing process takes many years. Joshua Tree, in southern California, possessing

(Continued on page 389)

Stream Improvement

In a proclamation declaring the week of August 13 to 20, 1945, "Stream Improvement Week" in Indiana, Governor Ralph F. Gates urges all civic and other organizations in the State "to help change this attitude of apathy to one of action" so far as stream pollution is concerned. He points out in his proclamation that Indiana ranks only twenty-first among the states that have done something about stream control. He challenges Hoosiers to do all in their power toward stopping pollution of Indiana streams.

Iowa's Bird

Two-thirds of our States now have official State Birds, but only a couple of them have brought out any publication descriptive of this emblem. Iowa, thanks to the Des Moines Audubon Society, has now done the best job for its avian insignia, the Goldfinch. The booklet that has been published is the work of Mabel Goshorn Tate and Josephine Baumgartner, and tells the history, habits and other facts about the bird. This is available from the Des Moines Audubon Society, 1143 36th Street, Des Moines 11, Iowa, at fifty cents.

Dutch Bulbs

In the face of German occupation, Dutch bulb growers planned for the future and the reconstruction of their industry, according to the Netherlands Information Bureau. The result has been that they are ready to return to the American market with a large fall shipment of bulbs this year. Eighteen million pounds of bulbs are expected to be shipped, and at prices lower than before the war so far as many choice bulbs are concerned. Even during wartime, the report states, growers have been developing new strains, including a daffodil that grows three times its former size.

Filching Falcons

One of the most vulnerable peregrine falcon eyries is in Palisades Inter-state Park, a sanctuary where the nesting birds should be safe. However, the nest was robbed of one or two young this year, and two to four young were taken last year. There is evidence that young, would-be falconers were responsible last year, although who pillaged the nest this year is in doubt. This supports our argument that young falconers, unhampered by knowledge, are a serious threat to the birds, and supports Dr. Walter A. Spofford who urged, in his falconry article in our May issue, that falconers act to stop such threats to the birds. We would be happy to hear from others who know of depredations on known eyries. One site near Harper's Ferry is annually robbed, and no peregrine is safe in Maryland, where the authorities still live in the dark ages with regard to hawks.

LET'S GO!

Fight to the Finish . . .

SAVE WASTE PAPER!

Some of the paper scattered around here may have come from you only two months ago! The need for waste paper to meet military and essential home front requirements is so great that the mills use the paper just about as fast as they get it.

The millions of paper cartons and wrappings that go overseas *don't come back!* They take precious paper "out of circulation." We at home have to save paper all the harder to meet all the nation's needs.

The Pacific war calls for vast amounts of supplies, often double- and triple-wrapped with heavy waterproofed paper to withstand tropical conditions.

Save every scrap of waste paper. Keep it in a "Victory Corner." Watch your local newspaper for collection dates. If you have trouble getting paper collected, call your local Salvage Committee of the War Production Board. *Let's go!*

AMERICAN NATURE ASSOCIATION

This advertisement prepared by the War Advertising Council in cooperation with the War Production Board and the Office of War Information.
Space contributed by this publication.

THE MUSEUM GOES TO THE LITTLE RED SCHOOL-HOUSE

(Continued from page 376)

nearby, a boy crayons a cardinal. Outdoor programs, children's clubs and other activities grow out of these opportunities. New horizons are thus brought to the rural child in dramatic fashion. Gateways swing wide and many enter eagerly.

Although only a little more than a year old, the Geneva County project has proved so successful that requests for similar programs have come from other states. Educators and civic leaders see in them a solution of youth problems, both of today and in the postwar period. Nor is the need limited to the rural child. Cities have their problems, too, often more complicated ones. City children's museums, often started in the needier sections, have spread, through branches, to become city-wide activities.

The first large city children's museum sponsored by the Hornaday Foundation was organized shortly after the first rural project got under way. This was at Nashville, Tennessee, where a museum association was created, a large stone building in a slum area made available by city officials, and the project launched. Hardly a pane of glass remained in the building, which had been neglected and a target for rocks. Its glass has been restored, its grounds beautified, and the museum now brings a thrilling new world to thousands of city youngsters. Branches are planned when postwar conditions permit, and the Nashville project is actively backed by a committee of leading citizens.

One request for aid came to the Hornaday Foundation from a rural area. It said: "Our schools have been closed for over two years, and we felt if your splendid traveling museum might bring its visual education and recreation program to our empty school buildings and use them as centers of operation, our children might again resume their much needed education." So serious has been the shortage of teachers, because of the demands of war, that this rural area is without any form of school program. This may surprise many Americans, but such requests for help are a challenge that must be met.

It is the firm belief of the William T. Hornaday Memorial Foundation, and its distinguished sponsors, that every community can and should have a children's museum. To attain this goal the Foundation is planning to raise an endowment of $1,000,000, to care for postwar projects. During the Foundation's first year five new museums were launched with an expenditure of only $3000. Thus an endowment fund would permit expansion and steady progress, and no contribution to its realization is too small.

NATURE HELPS

After days and nights of savage fighting amid the lava rocks of Iwo Jima, a Jap grenade tore off his right arm. From a bloody foxhole to a beach, then to a ship, and finally, by plane, he came to a California military hospital. "He just won't talk," the flight nurse had said, when he was gently taken from the plane to a waiting ambulance. "He only turns his face to the wall." Shock, inhuman demand upon the mind and body of man had been too much.

He lay on his bed in the ward, silent, withdrawn. Outside his window was a tall post, to which was nailed, for some reason, a bit of three-ply cotton rope. A pair of linnets tugged and strained at this to get bits of it for their nest-building. The handsome, red-headed male, and his drab mate, took turns at the rope end. Sometimes they succeeded in getting a scrap, sometimes they failed, for their only tool was the stubby, seed-crushing bill of the finch tribe.

From his bed the Marine watched quietly. Then one day he suddenly turned to his nurse. "Look at those birds, will you!" he said. "Honest, they make me ashamed of myself. Look at the old man, singing like Caruso while his wife works on that piece of rope. Then he takes his turn." He looked out at the linnets again.

"Nurse," he continued, "do you realize that the only tool they've got to work with is a bill less than an inch from their eyes. How much could I do if my hand was stuck on my nose instead of my wrist? And the old boy sings on the job all day, too?"

He grinned. "What do we eat for chow tonight?"

This incident is sent to us by C. M. Goethe of California. It is, we feel, an example of the inspiration and the regenerative influence, both for mind and body, that Nature offers. Military doctors, particularly the psychiatrists, working with men suffering from battle shock and fatigue, are finding this out. Whether it be sea shells or butterfly collections, bird study or rock collecting, Nature offers a helping hand to the fighting man who has given so much for his fellow man. Often she can do even more for him than his fellow man.

Bird of Paradise

Fascinating are many of the letters that come back from our men and women on the far-flung fighting fronts. One such comes from Robert K. Presson of the U. S. Army, writing from New Guinea:

"Today I saw what every zoologist would have given a considerable amount of money to see, and even now, back in my tent, I can scarcely believe it myself. Having the day off, and a stiff cool breeze blowing, three of us fellows started to do some exploring. We took an uphill road that ran back into the mountains, a singularly beautiful trail that now opened on savannas, again closed into the jungle.

"On the way we saw several strikingly-marked doves, and quite a few parrots and parakeets. There were breathtaking views over precipitous valleys towards the rain forest in the distance. Small native thatched villages were clustered on the hill sides. We had walked about three miles when we sat down to rest. A native in red loin cloth came along and stopped to chat. A pupil of a missionary, he spoke English fairly well, telling us there were birds of paradise about. I drew a picture of one for him, which pleased him no end.

"After resting for a half hour we started back single file. On our right I heard a peculiar sound, quite high-pitched, and when I heard it the second time I pushed through a tangle of bamboo and looked up. About halfway up on a gigantic tree, swinging on a vine, I saw a bird of paradise in full plumage. The top of his head was yellow, the throat green, the breast a soft buff-brown and from under his wings flowed beautiful red plumes. I could not believe I had really seen what is the most unusual sight in New Guinea. I yelled in my excitement for the others, and when they reached me there were five males, fluttering on the branches. Such a hooting and a crowing they all set up!

"And then we saw the incredible sight—four females darted onto the limbs of the tree, and the males kicked up such antics. They jumped about and pecked at each other, their red plumes flowing like cascades in the breeze. They were high but fairly visible, and such a display I never saw. The plumes of the males were a foot long. The dance lasted about twenty minutes and we stood there gaping that long. Nor did we frighten them, for we, after a while, began to hoot and call and they set up a louder racket. It was an unforgettable sight and one of incredible beauty to see them in full dress and dancing in the jungle."

Flower Week

Under the sponsorship of the Society of American Florists, "National Flower Week" will have its first annual observance during the week of October 21. It is announced as a program of education rather than a plan of sales promotion; a period during which attention will be directed toward the beauty and sentiment of flowers and little-known problems related to their production and development. Headquarters of the society is located at 600 South Michigan Boulevard, Chicago 5, Illinois.

NATIONAL MONUMENTS

(Continued from page 386)

some of the character of both the Mojave and Colorado deserts, displays the grotesque desert plants from which it takes its name and the geology on the scale required for adequacy. In the group which are of particular scientific interest belong such areas as Muir Woods, with its redwoods; Petrified Forest; Death Valley; Organ Pipe Cactus; Rainbow Bridge; Arches; Chiricahua; the vast gypsum dunes of White Sands; Dinosaur, of particular interest to the paleontologist and geologist; and a score of others. The new Jackson Hole National Monument combines both historic and scientific significance.

Though most of the historical areas administered by the National Park Service are in other classifications than monument, it is interesting to note that a number of historical monuments have been established by Congressional action —such as George Washington's Birthplace; Appomattox Court House, where Lee's army was surrendered to Grant; Andrew Johnson, containing the tailor president's home and shop; and Homestead, consisting of the first "claim" entered under the Homestead Act of 1862. In addition, several others, such as Canyon de Chelly, Badlands, Pipestone and Ocmulgee have been established in the same way. Eight areas originally established as monuments have since been made, or included in, national parks.

The National Park Service has a keen sense of its trusteeship toward this enormously interesting and valuable group of properties; though the task has been difficult under war conditions, it is giving all of them the best protection it can; it has steadily learned more about them and endeavors to pass on its increased knowledge to the public. Large or small, they are, with minor exceptions, I am convinced, being devoted to their best use.

If it be true that to many the designation "national monument" is somewhat misrepresentative, perhaps much of the fault lies in our failure to enlighten the public sufficiently as to its significance. At any rate, the term is not necessarily restricted to man's commemorative symbols. It is more apt for the National Park Service's use than any other term suggested. To us, it means that many of the most expressive works of Nature and of man are being preserved—not just for the sake of preservation, but so that we may all have a better understanding of our country, an increased awareness of things that make it great, and a deeper appreciation of those qualities of it for which men are willing to lay down their lives.

Cornell Plantations

Dated "Autumn, 1944", the first issue of *Cornell Plantations* recently made its bow. Its objective and scope is indicated in a statement by Liberty Hyde Bailey in which he writes: "Cornell University with its State Colleges has a great domain, notable for the diversity of its soils and contours and for the command of distant landscapes. Buildings occupy a very small part of the area. All the rest is planted, in grass and crops and marginal growths and trees. It is inhabited by attractive livestock, and by wild animals. All these possessions are invaluable treasures and stimulators. All of them should be accessible and available in a single comprehensive organized plan, whereby utility, personal interest, fertile suggestion, and beauty of localities and landscape may be brought to bear in a noble concept of education. Certain parts may be planted for botanic interest as others are planted for crops. Seasonal operations of farming should be part of the concept of a natural progressing year. Roads should serve the needs of farming at the same time that they utilize the beauty. Every department of teaching and research may have part in the program. There should be one united enterprise and one great picture."

With this vision of the future, the plan for The Cornell Plantations is launched and its progress will be reflected in the quarterly that takes its title from the plan. We do not know how widely available the copies of the first issue of the publication are, but to all interested it presents a picture of an important program, and such individuals are invited to get in touch with Professor Bristow Adams, Cornell University, Ithaca, New York.

Green Mansions

Behold Our Green Mansions. By Richard H. D. Boerker. Chapel Hill, N. C. 1945. The University of North Carolina Press. 313 pages. Illustrated. $4.00.

This is the most recent volume for addition to the conservation library. It is a book about American forests, including forest restoration, soil conservation, timber, flood control, wildlife, grazing, scenic beauty, recreation, preservation and use. The author, as one might expect, is a forester by training and experience, and currently a teacher of biology. With our forests enlisted in the war for the duration, the impact of that conflict through its demands upon the forests is a vital consideration, not only today, but, particularly, for the future. This book is one that will inform every American who realizes that it is his duty to know the fundamental importance of our forests and the problems they involve. Mr. Boerker's book can serve both as text and as collateral reading in school work in the social sciences and conservation. It is a readable volume as well as a valuable one.

R. W. W.

CLASSIFIED

Books Wanted

WANTED two copies "A Guide to Bird Songs", Aretas Saunders. Advise **National Audubon Society, 1006 Fifth Ave., New York 28, N. Y.**

BOOKS

FREE BARGAIN CATALOGUE OF BOOKS. All subjects. **NATIONAL BOOKSELLERS, 1182 Broadway, New York 1, N. Y.**

BUTTERFLIES

"STARTING YOUR BUTTERFLY COLLECTION" Tells how to preserve your specimens. Ten cents. **EVELYN GILSTRAP, Sanitarium, California.**

Medical Technicians

Medical Laboratory Technicians in great demand. We train you in your own home, in your spare time. Bulletin free. **Imperial Technical Institute, Box 973-C, Austin 5, Texas.**

MINERALS

"ROMANCES in stones." Arizona rare minerals. Collectors or museum grade, 12 miniatures, assorted, colorful, brilliant, genuinely rare, $3. **Sam Parker, 2160 East Van Buren, Phoenix, Arizona.**

NOVELTY PLANTS

CACTUS ROCK GARDENS. Crystal rock and soil 2 for $1.00. 10 larger Cacti with booklet $1.00. Double Petunias $2.00 per dozen. **COOVER'S, Orlando, Florida.**

OZARKS

RAYBURN'S OZARK GUIDE, Lonsdale, Arkansas. A 100 page quarterly of Ozarkian information for homeseekers, naturalists, sportsmen, folklorist. Copy 35¢. Year $1.00.

PIGEONS

THE PIGEON LOFT, Sherman Oaks, California. Illustrated monthly. Helpful articles on the joys of breeding fancy, racing, utility pigeons. $1 year. Sample 10c. Satisfaction assured.

Sea Shell Jewelry

TROPICAL SEA SHELL JEWELRY

EARRINGS, Beautiful Floral Designs—slip on or screw style, 75c. Brooch to match, 75c postpaid. Name your own color—Complete price list on request. **TROPICAL SHELL SUPPLY, Box 859, Collier City, Florida.**

SEA SHELLS

SHELLS FOR SALE Land and Marine; Cape Cod Special 12 for $1.00 in box; Lists on request. **MRS. F. K. HADLEY, Box 33, West Newton, Mass.**

SHELL COLLECTORS: Five Unique, Exquisite Florida Sea Shells $1.00. Postpaid. FREE BOOK —"Florida Coast Shells". Illustrated—Instructions. **VARIETY, Box 1420 H, Sarasota, Florida.**

WRITING

SELL IN THREE MONTHS OR MONEY BACK
If you can write correct English—You can write Juveniles. I have sold some 3000-3500 stories . . . articles . . . editorials . . . serials . . . series. Now I'm teaching.
"Instruction—Criticism—Collaboration"
Write Dept. N for terms
WILL HERMAN
Author of "My Juvenile Success Secrets" and "My Formula for Fiction."
Sanford, Fla.

Under the Microscope

By JULIAN D. CORRINGTON

REVIEW AND PREVIEW

THE present issue begins the ninth year of *Under the Microscope.* Starting in prewar days with articles of the most elementary nature, we have gradually built up to more advanced subjects, at the same time trying to keep in mind the newcomer and beginner, who has been following this Department but a short time and has missed the simpler explanations.

This is a difficult assignment—the attempt to interest all classes of reader. A lead article on an introduction to study of pond life, with simple descriptions of how to make a hay infusion, keep cultures of protozoa, and identify the commoner forms, cannot be run very frequently without losing the regular reader. Recently, however, we have received an occasional letter stating that the subject was interesting but over the head of the correspondent, who wished a reference to some material of a more elementary nature. Presumably there are many who would write us to continue as at present, or to go on into still more advanced subjects, but as satisfied followers seldom write, there is no way of knowing just how well we are going over with the majority. So now we are going to poll you.

An important topic to discuss with you concerns subject matter itself rather than its pitch. Microscopy is all embracing. Thus far we have dealt in feature articles alone with 21 titles in microscopy proper, including microtechnique, photomicrography, operation and theory of the microscope, electron microscope, drawing, projection, home laboratory, and others; 8 articles in the field of industrial microscopy, as textiles and paper; 3 in criminology; 7 in general biology; 11 in botany, including 3 in bacteriology; 35 in zoology, including 6 in parasitology, 8 in histology, and 2 in embryology. Along with these features have gone a running historical outline, 2 histories of optical companies, several biographies, and 195 book reviews. There have been many trade notes, apple polishers (primarily for the teacher), quizzes, contests, and miscellaneous items. What is your chief field of interest? Are you finding with sufficient frequency an article in this Department that appeals to you? Our endeavor has been to keep the distribution of subjects about in the proportion indicated above, which seems close to the correct division for a cross section of average interest.

Below you will find a questionnaire to clip out and send in. If you are a microfan, we know you will need no urging to mail that coupon now, before you forget it. *Or write a letter if you prefer not to cut the magazine.* Bear in mind in replying that two features per issue will mean shorter articles with less meat in them: we are frequently torn between our inborn (and doubtless overdeveloped) yen to write full and detailed articles on a given topic, which means a long article taking up most of the available space, and the desire to include at least something for both the beginning and advanced microscopist. Have the leading articles been too long and comprehensive in many cases? How about illustrations? They take up a lot of space, but in most instances we feel them to be essential—entirely aside from the fact that they dress up an article and greatly enliven the appearance of the page. Sometimes they are frankly eye-catchers, but in this capacity they probably induce many to read the accompanying article who would otherwise be repelled by a solid page of type.

The forecast for 1946 et seq. includes at least some return to primary studies; how much depends largely on response to this poll. Very likely we shall also carry certain subjects further, and present some advanced techniques. The Historical Outline

Dr. Julian D. Corrington,
NATURE MAGAZINE,
1214 Sixteenth St., N.W.,
Washington, 6, D. C.

Underscore phrases that best express your views.

Dear Dr. Corrington:

I read / all / certain parts / of your Department / regularly / usually / occasionally /.

Past articles that I have found most interesting or helpful dealt with .....

.....

.....

I would prefer greater emphasis in the future on.....

.....

This Department, in my opinion, should / continue along past lines / stress general information for the general reader and reduce specialties and technique to a minimum / devote more space to technique, including advanced procedures /.

There should be one more or less lengthy feature article each month / aimed at the general reader and somewhat less technical or advanced than at present / designed for the special reader, educational in purpose, and continuing into special fields / mostly elementary, stressing needs of beginners /.

There should be two shorter main articles each month, one elementary and one more advanced.

There should be no feature articles but rather a series of brief subdepartments, to provide material for all classes of readers.

The illustrations / serve a useful function and should be retained / serve no important purpose and should be eliminated /.

The number of illustrations per month, averaging three at present / is about right / should be decreased / should be increased /.

Past subdepartments that I would like to see retained are / Beginner's Primer / Advanced Hints / Historical Outline / Microbiographs / Apple Polisher / Microquiz (puzzles, games, contests, quiz photos and the like) / Trade Notes / Book Reviews.

New subdepartments that would interest me would include

.....

.....

Other suggestions: .....

.....

.....

Name .....

Address .....

.....

.....

will complete its excursion into bacteriology and transport the reader into the allied field of parasitology. In the past we have been able to offer a large number of pamphlets and catalogs for free distribution to our readers, a service that had to be discontinued during the war. As manufacturers return to partial and then full scale production of civilian goods, and as paper again becomes available for publications of this nature, this service will be resumed. The Beginner's Primer will complete its survey of entomology and launch forth into fresh fields. The history of the great optical companies, another war casualty, is not scheduled for additional chapters as yet.

This is your Department and we want you to have some voice in its contents. What have you got on your mind that you would like to get off your chest?

They asked the reader to disclose
His microscopic loves,
And up spake good Objectivo,
For him no white kid gloves,
"I don't like your mawkish 'humor',
"Your lapses into slang,
"But your article on Wheat Rust
"Went over with a bang!"

But what of yon Magnifico?
Alas, he sits and mopes.
He doesn't like the History
And he thinks that Frogs are dopes.
He nurses secret grievances,
Withholds his praise as well,
But these classic lines will jog him,
His preference for to tell.

BEGINNER'S PRIMER

Most of us learn our first butterflies and moths by means of colored illustrations in various guide books. This is a natural but definitely unscientific method. It serves the purposes of the majority of students of natural history, but in each generation there will be a few who wish to go at the matter more thoroughly, and tackle the scientific classification of the Lepidoptera. They soon learn that they are up against one of the toughest groups in the whole animal kingdom, and that most authorities agree that the perfect key to species of these winged sprites has yet to be written.

Practically every part of the body is used in key manufacture. Wing venation is primary, and generally requires a special bleaching procedure to render the veins fully visible. Antennae, ocelli, mouthparts, legs, body, genitalia, and, of course, coloration and pattern, all come in for treatment. Separate keys are required for eggs, larvae, pupae, and adults, since each of these stages in the life cycle is so different from the others. The subject should be undertaken only by the advanced student who has some particular reason or desire for attempting the taxonomy of this large order. The some 105,000 species are grouped under 1000 genera, 190 families, and a multiplicity of suborders, superfamilies, series, or other divisions, varying with the system used by different schools of experts.

The beginner is well advised to get along with a few of the better-known family names, as Noctuidae, Sphingidae, and Papilionidae, and let more advanced classifications go by the boards. Fortunately, the more familiar species have fairly standardized common names, for example, Gypsy Moth and Monarch Butterfly. Fortunately, too, it is not necessary to be an expert taxonomist of the Lepidoptera in order to enjoy both the making and the use of slide preparations, of which a greater variety are possible in this order than from any other group of insects. Most of these are well within the capabilities of the average beginner; here are some of the favorites.

A CLEAR-WINGED MOTH

EGGS: These are among the marvels of the animate world, showing, as they do, such great variety and beauty in size, form, coloration, sculpturing, and other features. They are laid singly or in groups, such as chains or masses, usually on the host plant, upon which the larva will feed when it emergies. Most of these eggs have hard shells, and the chief step in mounting them is to prick this shell with a very fine needle so that reagents may gain access to the interior and drive out the air that would otherwise be trapped, resulting in ugly, black, opaque objects, useless for microscopic observation. If the eggs are unhatched, a fairly large opening must be made in the bottom, in order to remove the contents; if hatched, a small needle prick will suffice or, as often happens, the exit hole made by the larva serves the purpose and no manipulation is necessary. Pass such eggs through xylene to clear them, and mount in balsam. Arranged slides, with the eggs of the same or of mixed species forming some sort of geometrical pattern, are most attractive slides. Often lepidopterous eggs are interspersed with those of other insects and with other microscopic jewels, as foraminifera, diatoms, or sponge spicules.

LARVAE: The larger, naked caterpillars make good subjects from which to obtain a whole mount of an insect spiracle. These are large in size, one pair on the prothorax and eight pairs on the ab-

THE MICROSCOPE AND ITS USE, by Frank J. Munoz, Technical Microscope Consultant, and Dr. Harry A. Charripper, Prof. of Biology, New York University.

This book should prove of inestimable value not only to the technical man, but to anyone interested in the microscope, its principles, and use, even though they have had no advance knowledge of physics. The mere possession of a microscope calls for proper use and care of it. This volume gives practical instructions and advice in clear, simple language.....$2.50

PLANT GROWTH SUBSTANCES, by Hugh Nicol.

Presents a brief review of plant growth substances for laymen, students and chemists who have not specialized in this particular field. Discusses the development of growth-controlling substances from the time they were found in plants and urine, to the discovery that synthetic substances, with similar characteristics, can be manufactured and used.

PARTIAL LIST OF CONTENTS: A chapter for the Layman: How to use the commercial growth substances; Synthesis of the growth substances; Descriptions of methods of application; Growth substances from natural sources; Some constituents of urine; Chemistry in relation to growth; Identification of growth substances and related substances.....$2.00

THE BOOK OF GARDEN IMPROVEMENTS, by Walter Brett.

For the ambitious and more critical gardener, this book suggests attractive features to make your plot of growing things a real garden. With numerous illustrations from photographs and drawings.

CONTENTS: Pergolas, arches and arbors, paths, edgings, terraces, steps, rock gardens, pools, ornamental walls, brickwork, trellis gates, fences, the sunken garden, summer houses and seats, vases, baskets, cement and concrete in garden, lawns and hard courts, hedges, etc.....$2.50

Mail your order to

AMERICAN NATURE ASSOCIATION

1214 16th St. N.W., Washington 6, D. C.

domen. The skin is clipped around a spiracle with a fine pair of scissors, the cut-out square is potashed to remove any soft tissues adhering to its inner face, washed thoroughly in water, then run up through the alcohols and xylene to mount in balsam. Attached to the inner face of the spiracle is a large trachea which promptly divides and subdivides. Dissect out a length of this branching respiratory system, wash well, or potash and wash, dehydrate, stain lightly in eosin or fast green in 95% alcohol, complete the dehydration, clear in xylene, and mount in balsam, taking care to spread out the tracheae so that none overlap.

The head may be mounted to show the microscopic simple eyes and the minute antennae; the mouthparts may be dissected out and mounted, properly spaced; the compound spines, especially those of venomous species, will prove interesting as whole mounts. Still another structure is the crochet, a form of claw. The three segments of the thorax of caterpillars, as in adult insects, are provided each with a pair of true legs, each of which ends in a single claw. In order to support the long worm-like abdomen and especially to assist walking and climbing, the abdominal segments develop temporary larval legs, known as prolegs, that are lost at metamorphosis. These are fleshy, generally two to four pairs in number, and end in rows or circles of small sharp hooks, for clinging, the crochets. Treat these as per the directions for spiracles.

PUPAE: No structures of the pupa itself require mounting, but the silk, unraveled from a cocoon, or obtained from the pads or girdles used in attaching the chrysalis, will be interesting as a whole mount to compare with commercial silk.

ADULTS: If a whole mount is desired of some very small species, it is best made with the wings spread, as if for a pinned specimen, with the ventral surface up; however, such a mount is of no particular value, and separate slides of the various parts will be much more instructive and interesting. In general, all structures that are darkly pigmented should be bleached or potashed; otherwise the object will be so dark or opaque that little detail can be seen.

The antennae present a number of specialized types: in clothes moths they are filiform, but with a whorl of bristles at the bases of the segments; skippers (Family Hesperiidae) have clavate (clubbed) antennae, with the knob extended to form a sharply-pointed, recurved hook, while in typical butterflies they are knobbed but not hooked. Bipectinate antennae occur in both sexes of many of the larger moths, as the giant silkworms, and are especially plumose in males.

In most adults of this order, the mouthparts are suctorial and formed into a long proboscis, carried coiled like a watchspring when at rest. The flat mount (side view) and cross section of this organ are highly interesting.

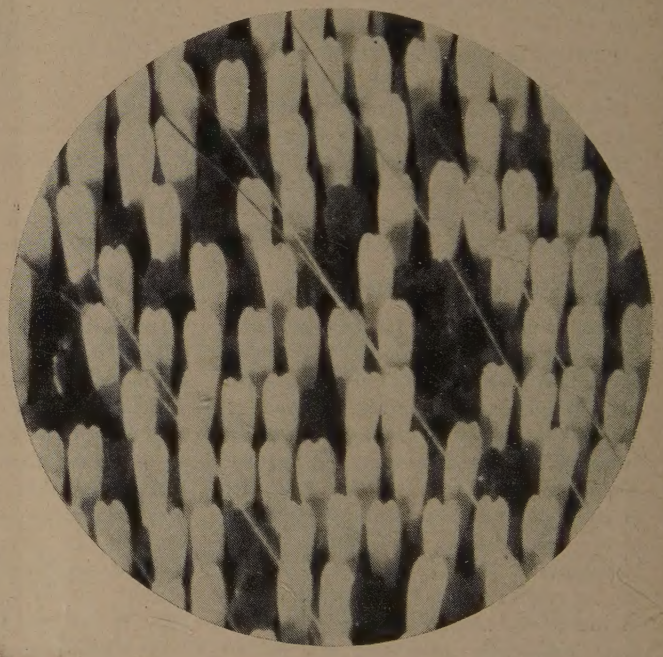
The wings offer an almost endless series of possibilities. One of the first slides seen by every beginner is a whole mount of butterfly wing scales, very easily prepared. Place a drop of thin balsam on the center of a slide, allow it to flow into a flat film, then into this mountant scrape a number of scales and add a cover glass. A dried wing is used, as from a pinned specimen; a broken or damaged insect serves perfectly. Scrape a portion of the wing with a knife blade held vertically to the surface. A whole mount of an entire wing from a small species, or of part of a wing from a larger one, will show the shingled arrangement of the scales and also display the hairs.

For studies in wing venation, very important in classification, and interesting in any case, it is necessary to descale the wing, or render the scales transparent by bleaching them, with or without a staining procedure to make the veins conspicuous. The simplest method is to remove the scales with a stiff camel's hair brush, but this is a rough and ready treatment, apt to be incomplete or to damage delicate wing membranes. Bleaching is generally done with Labarraque's solution (sodium hypochlorite) or, as a second choice, Javelle water (potassium hypochlorite). Remove an entire wing, dip into 70% alcohol, then into 10% hydrochloric acid for a few seconds, then place upper surface down, in freshly made Labarraque's solution in a Syracuse watch glass, until bleached. If the wing is occasionally removed from the solution and dipped in the acid, then replaced in the bleach, the action is hastened. Wash well in 83% alcohol, then go through 95% and 100% alcohols, xylene, and mount in balsam. Some technicians prefer boiling the wing in peroxide of hydrogen until bleached, then wash in water, dehydrate, clear, and mount.

To stain the veins, use 1% aqueous eosin. Soak the wing first in distilled water, stain for several hours or days until well colored, then wash out all excess stain in an ascending series of alcohols, removing the color from the membrane but leaving it fixed in the veins, complete dehydration, clear, and mount in balsam.

Our illustration shows one of the clear-winged moths, a type that violates the usual lepidopteran edict of fully-clothed wings; it shows that wing venation in this order is striking, and gives an idea of what to expect as a result of bleaching and staining techniques.

Butterfly legs are usually normal and strongly developed. The Brush-footed Butterflies, Nymphalidae, have the fore pair reduced. Claws are generally single and simple, but are cleft in the Cabbage Butterfly family, Pieridae. Many species possess an epiphysis, a spur on the inner surface of the end of the fore tibia, similar to the antenna cleaner of the honeybee. The genitalia are important aids to advanced classification and are almost always prepared as slide mounts, but the subject is too technical for inclusion here and would interest only the professional entomologist.



MICROQUIZ PHOTO

What are these curious looking objects, standing up in serried rows? Tenpins? Markers in a game? We'll tell you this much—the photograph has a magnification of 73X. See what you can do in sleuthing out the identity of these black and white pegs, then compare your answer with the solution in these columns next month.

PAMPHLETS

Reader requests for the three excellent pamphlets offered in the May issue were testimony to a lively interest in this Department. When paper and available products permit, many interesting publications should be forthcoming for the postwar microscope enthusiast. An indication of the preoccupation of microscope manufacturers with the business of winning a war is to be found in the publication by the Bausch and Lomb Optical Company of an inspiring booklet entitled "Seeing It Through."